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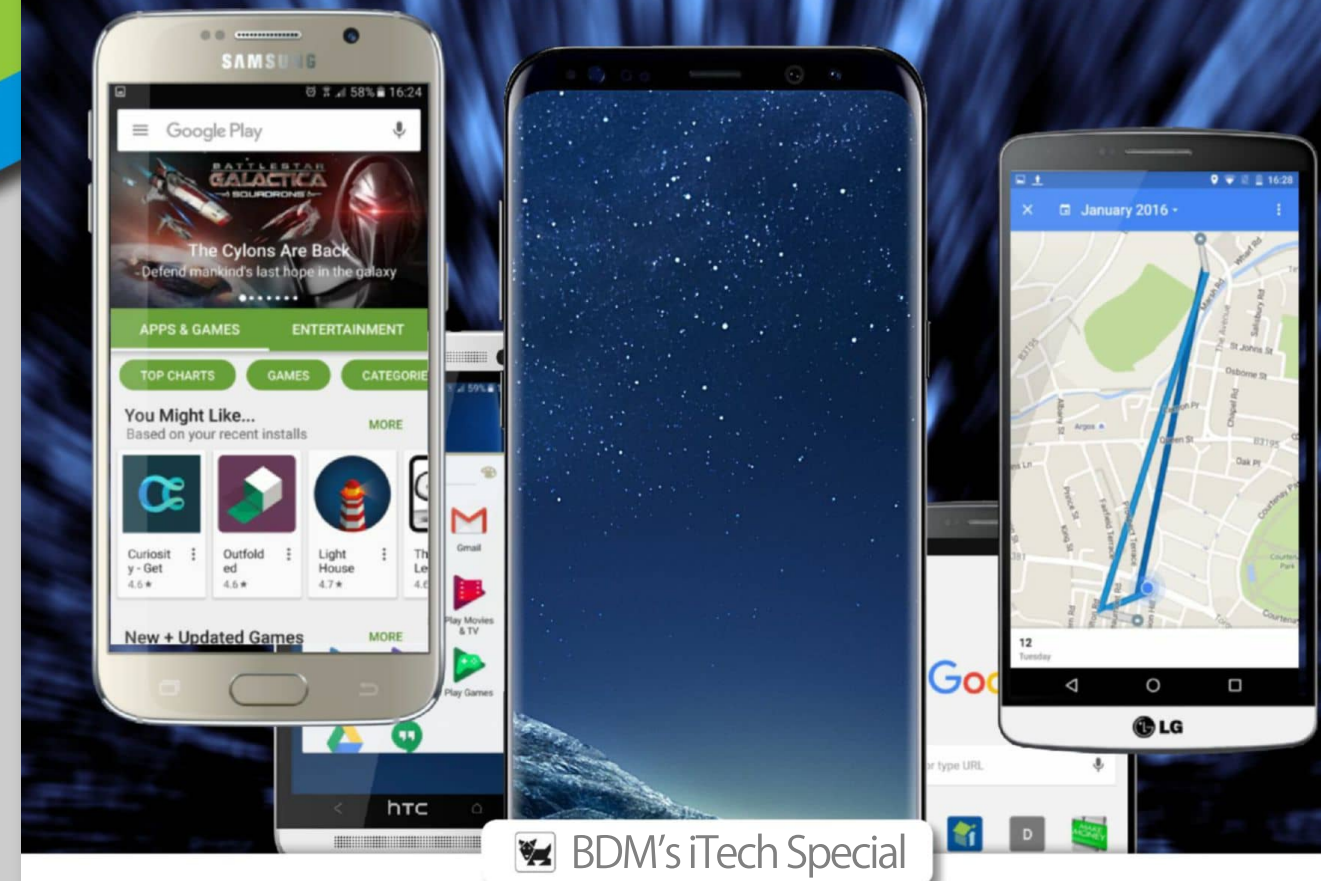
BDM's i-Tech Special

# The Complete **Android** Manual

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One of the many great things about Android is that it can be as simple or as complex as you like. If you just want a device that lets you browse the latest YouTube videos or check your Facebook account, Android certainly allows you to do that. However, to get the most from Android, you really need to spend a bit of time exploring all of the options to find out just what your incredible new phone or tablet can do.

The Complete Android Manual will take you from getting the most out of the stock Android apps, such as Gmail and Chrome, through solving common problems, and on to learning about adding launchers and rooting your device. We will show you how to explore the OS and get more from any Android phone or tablet, whether it is four years old or the latest cutting edge flagship model.





34

**USING  
GOOGLE  
NOW ON TAP**

Learn how to search on and off your Android device with Google Now on Tap.

56

**ESSENTIAL  
GUIDE TO  
ANDROID  
PHOTOGRAPHY**

Discover some simple tips, tricks and apps that will improve your Android photos.

98

**HOW TO USE  
MULTI-WINDOW**

Learn how to truly multi-task on you Android smartphone or tablet with multi-window.

# Contents

**6 EXPLORING ANDROID**

The History and Future of Android	8
Android Controls and Connections	10
iPhone vs Android	14
Explore Google Nougat	18
Connecting to Wi-Fi Networks	22
Your Mobile Data Connection	24
Turn Your Device into a Mobile Hotspot	26
Adding and Syncing Accounts	28
Browsing with Google Chrome	30
Searching with Voice Search & Actions	32
Get More from Google Now on Tap	34
Manage Your Notifications	36
Manage Your Contacts	38
Personalising the Home Screen	40
Android Keyboard Tips	44
How to Find & Install Apps and Games	46
Manage Your Apps and Games	50
Locking Your Android Device	52

**54 DO MORE WITH ANDROID**

Guide to Android Photography	56
Navigating with Google Maps	60
Google Maps Expert Tips	64
Chat and More with Google Allo	66
Video Chat with Google Duo	70
Cast to Devices With Google Home	72
The Ultimate Guide to Facebook	74
Get Started with WhatsApp	80
Find, Download & Read Free eBooks	82
Automate Your Life with IFTTT	84
Android Security Tools	86
Boosting Android Performance	90
Reducing the Data You Use	92

Manage Multiple Passwords	94
Control Unwanted Interruptions	96
How to Use Multi-Window	98
Using a System Monitor	100
Android Power Saving Tips	102

**104 BECOMING AN  
ANDROID EXPERT**

Using the Developer Options	106
Speed Up Android Animations	108
Cut Blue Light with Twilight	110
Hidden Android Test Menus	112
Save Web Pages Offline	114
SMS Messages on a Wi-Fi Tablet	116
Dealing with Viruses on Android	118
Disable Android Bloatware	120
Sideload Android APKs	122
Understanding Doze & App Standby	124
Android Rooting Guide	126
Using a Root Toolkit	130
Android Rooting Terms	132
Tips for After You Root	134
Smart Home on a Budget	136
10 Android Security Tips	138
Clean Up with Smart Manager	140
10 Common Problems Solved	142

106

**USING  
DEVELOPER  
OPTIONS**

Learn how to use the advanced developer options that customise the Android system.

142

**COMMON  
ANDROID  
PROBLEMS  
SOLVED**

Identify and fix the most common problems encountered on mobile devices.

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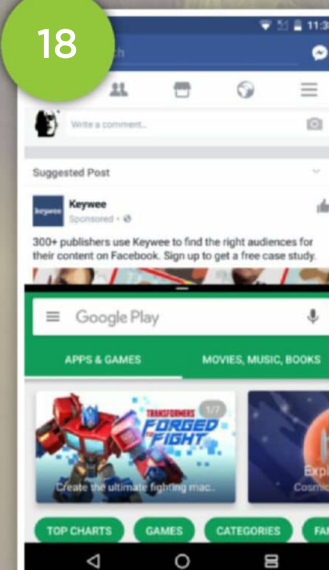


# EXPLORING ANDROID

Learn how to get started with your Android device, including sending emails, customising the home screen and choosing widgets. Find out the best way to set up your device and the easiest way to get online; also discover how to personalise the device and how to share images with friends, all in detailed step-by-step guides.

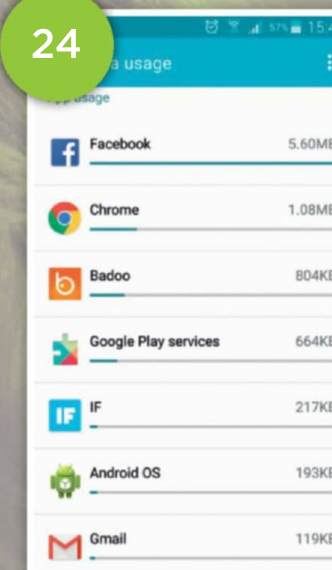
The History and Future of Android	8	Searching with Voice Search & Actions	32
Android Controls and Connections	10	Get More from Google Now on Tap	34
iPhone vs Android	14	Manage Your Notifications	36
Explore Google Nougat	18	Manage Your Contacts	38
Connecting to Wi-Fi Networks	22	Personalising the Home Screen	40
Your Mobile Data Connection	24	Android Keyboard Tips	44
Turn Your Device into a Mobile Hotspot	26	How to Find & Install Apps and Games	46
Adding and Syncing Accounts	28	Manage Your Apps and Games	50
Browsing with Google Chrome	30	Locking Your Android Device	52

18



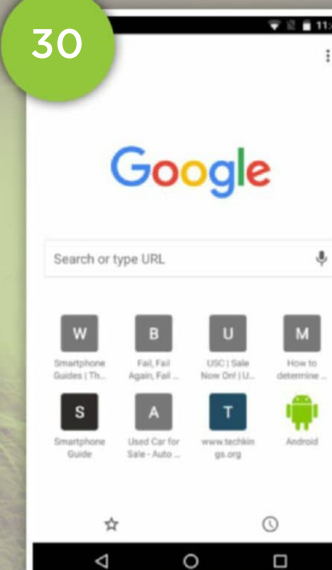
Explore Google Nougat

24



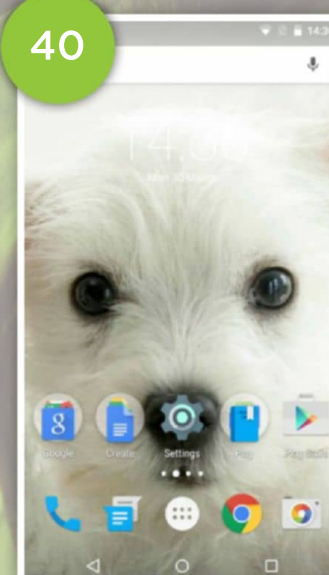
Your Mobile Data Connection

30



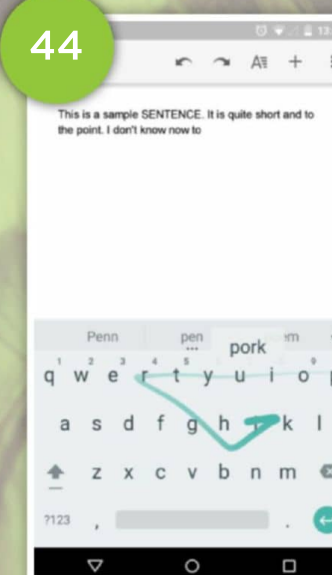
Browsing with Google Chrome

40



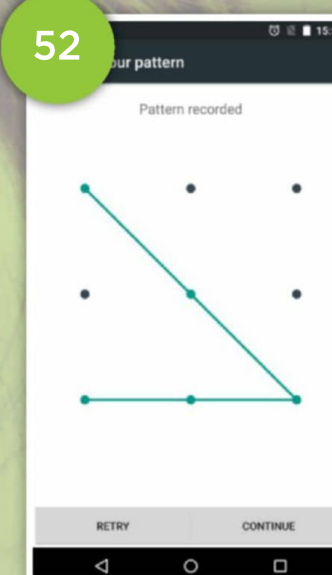
Personalising the Home Screen

44



Android Keyboard Tips

52



Locking Your Android Device





# The History and Future of Android

Android is the world's most popular mobile platform, currently powering more smartphones and tablets than Windows and iOS combined! More than a billion phones and tablets around the world run Android. It's customisable, easy to use, and since it's made by Google, Android phones and tablets work perfectly with all your favourite Google apps. There are millions of apps and games available on Google Play to keep you entertained, alongside millions of songs, books and magazines and movies.

## Understanding Android

► Android powers devices from some of the best handset and tablet manufacturers in the world, including Samsung, HTC, Motorola, Sony, Asus and more. Android devices come in all shapes and sizes, with vibrant high-resolution displays and cameras, giving you the flexibility to choose the one that's just right for you. Android devices are already smart, and will only get smarter, with new features you won't find on any other platform; this lets you focus on what's important and puts you in control of your mobile experience.

Not only that, Android lets you take control of your device. If you decide that you want a different keyboard, Android allows you to change that. If you want to alter how the home screen looks and even how it behaves, Android lets you do that too. Whilst these changes might sound complicated for some users, it is usually just a case of downloading an app from Google Play.

Android, although usually referred to as an OS, is actually a Software Stack. This is a set of compatible software components which, when used together, provide a service or solution. Android is made up of the operating system, the middleware, which connects the OS to various applications, and the key applications.

Android's mobile operating system is based on the Linux Kernel and has been developed as an Open Source Project. The AOSP (Android Open Source Project) is tasked with maintaining and updating Android. Because Android is Open Source, there is a lot more freedom around who can use it on their devices and who can develop apps for it, as well as more freedom to adapt and customise it.



## The Evolution of Android

It may not seem like a very long time but Android, and the devices it appears on, has changed greatly since it first arrived on commercially available handsets in 2008.



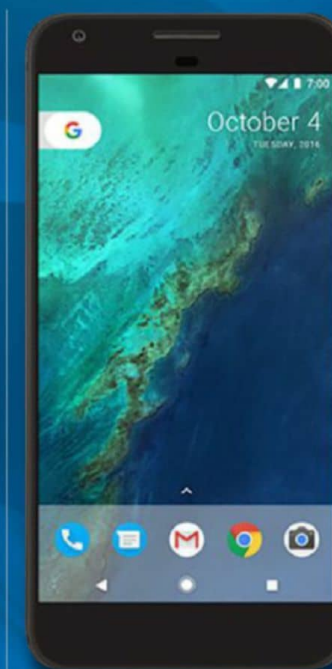
### HTC Dream (G1) + Donut (1.6)

► The very first commercially available Android phone was the HTC Dream (known as the G1 in some countries), which launched with a very early version of the OS that eventually updated to Donut. Donut was really the first version of Android even close to what we see on modern devices.



### Galaxy Nexus + Ice Cream Sandwich (4.0)

► Ice Cream Sandwich was the first version of the OS that tried to close the gap between phones and tablets. It first appeared on the much-loved Galaxy Nexus phone and introduced greater customisation, more control over data use and the Android Beam feature.



### Google Pixel + Nougat (7.0)

► The latest version of Android is Nougat and, although it may look fairly similar on the surface, it is a huge advance on Ice Cream Sandwich and other earlier versions. Paired with something like the incredible Pixel phone from Google, it is easily the best operating system around right now.

## Android Oreo?

► Android 8.0, or O or maybe Oreo, is currently due for release sometime in the third quarter of 2017. Google seem to be aiming to address some of the main problems with previous versions, and indeed problems that affect all smartphones and tablet. Things like restricting background tasks to prolong battery life, increased device security and general performance boosts will make up the meat of the update; also lots of smaller additions and improvements can be expected. Features like picture-in-picture have been announced, as well as many improvements to how notifications work. Perhaps one of the most interesting things is Project Treble, which aims to speed up the rate at which updates reach devices from third-party manufacturers.



# Android Controls and Connections

Although the exact buttons and connection ports on your Android device may vary, there are standard features which always appear. Let's take a look at those buttons, connections and controls, and see what they can and cannot do.

## Connections

These are the plugs, ports and other interfaces which allow you to connect or add something to your device.

### 1 - SIM Tray

Some devices, usually those with a removable battery cover, will have a SIM tray next to the battery. If your device has no battery cover, you will find the SIM tray embedded in the case. It is opened using a thin pin-like tool supplied with the phone or tablet.

### 2 - 3.5mm Audio Port

All Android devices feature a 3.5mm standard audio port, for use with headphones, headsets or speakers. This is usually placed on the top edge of the device, but exact location can vary.



### Micro USB

Most modern smartphones use Micro USB for both the charging connection and data connection. The position of this will vary depending on what phone you have, but it can usually be found on the bottom or side of the handset.



## Standard Buttons

By buttons we mean the physical buttons you will find on your device, rather than the capacitive controls on screen.

### 1 Sleep/Wake Button

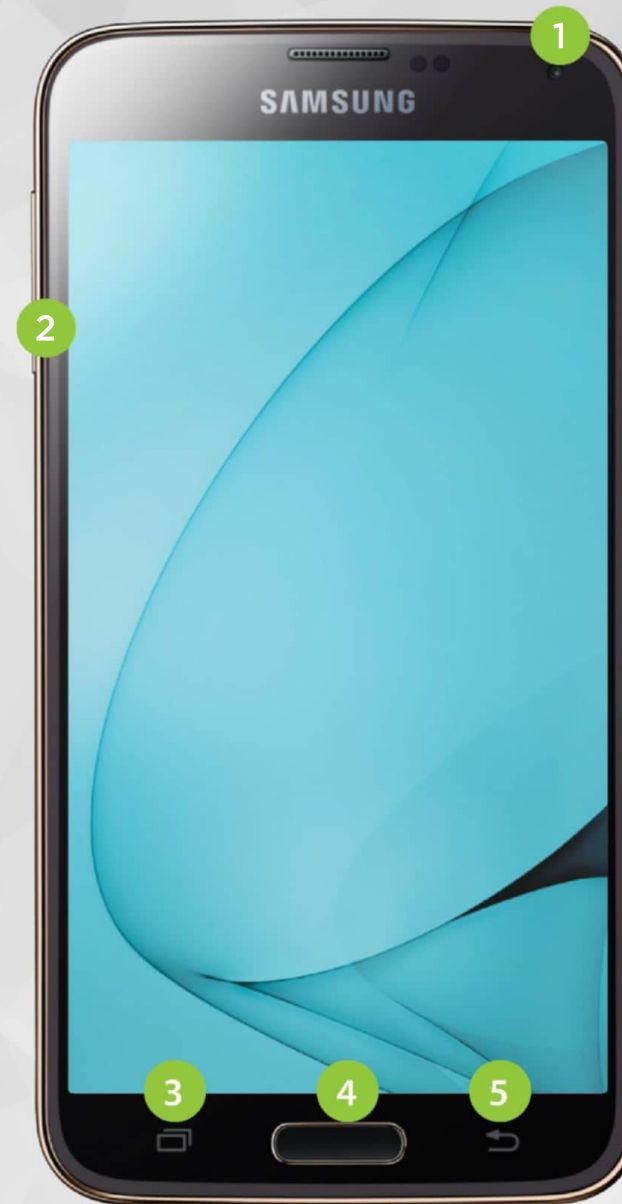
As well as being the button which turns your phone on and wakes it up out of sleep, the power button, when held, also brings up a menu for shutting down and restarting your phone. The exact options vary between handsets, but may include: Power Off, Silent/vibration Mode, Airplane Mode and Restart.

### 2 Volume Up/Down Buttons

The volume profile that the Up and Down Volume buttons controls depends on what you are doing when it is pressed. If on the home screen, this will change the main ringtone volume. If you are listening to music or watching a video, it will change the media volume. On most devices, pressing volume down along with the power button or home button will take a screenshot of whatever is on screen at the time.

### Camera/Light Sensors

Almost all smartphones will feature one or two small lenses or sensor pinholes on the front, usually next to the speaker at the top of the phone. These are light sensors, used by the phone to adapt the display, and also by the camera to judge light levels when taking photographs. The number of sensors can vary, depending on the device you have.



## Capacitive Buttons

Capacitive buttons are those which are part of the Android user interface, or touch-only buttons which are part of the screen.

### 3 Recent Button

This capacitive button, when tapped, opens the recent app screen. This shows a list of all apps opened recently, and allows you to quickly switch between them. At the bottom of the screen, you will often see tabs that allow you to switch to the Active Applications screen, where you can close running apps (background apps). In Lollipop, bookmarked web pages are also in the recent menu.

### 4 Home Button

If your device doesn't have a physical Home button, it will have a capacitive button instead. This will always return you to the home screen with a single tap. Tap and hold the Home button and you can open Google Now. It is possible, using third-party apps, to change the features of the Home button.

### 5 Back Button

The Back button always takes you back one step in whatever process you are currently following. If you tap Back from a settings sub-menu, it will return you to the previous or main settings menu. Pressing Back while playing a game will usually return you to the home screen.

## Additional Buttons

These are buttons which not all devices will have, but are still quite common on modern Android devices.

### Hardware Home Button

Tapping the Home button takes you to the home screen from wherever you are (in the settings menu or using an app). On most devices, holding the Home button will open Google Now. Pressing the Home button twice on a Samsung Galaxy phone will open the S Voice app. It is also where the fingerprint scanner is on the Galaxy S5 and Note 4.

### Camera Button

Some devices, particularly those from Sony and Nokia, may have a dedicated camera button on the edge of the case. This will normally only be used to control the shutter for the camera, although it might also double as a camera activation button.





## Tablet Controls

Just as with the smartphone controls detailed on your previous pages, tablet controls and connections follow a fairly standard layout plan. The exact position of the buttons may vary slightly between devices.



### 1 Sleep/Power

As well as being the button that turns your tablet on and wakes it up out of sleep, the power button, when held also brings up a menu for shutting down and restarting your tablet.

### 2 Volume Up/Down

The volume profile that the up and down buttons controls depends on what you are doing when it is pressed. When the volume display appears on screen, you can access more volume sliders.

### 3 Recent Button

This capacitive button, when tapped opens the recent app screen. This shows a list of all apps opened recently and allows you to quickly switch between them.

### 4 Home Button

Almost all devices have a physical home button, flanked by capacitive (but part of the hardware) Back and Recent buttons. The Home button often doubles as a fingerprint scanner.

### 5 Back Button

The back button always takes you back one step in whatever process you are currently following. If you tap Back from a settings sub-menu, it will return you to the previous or main settings menu.



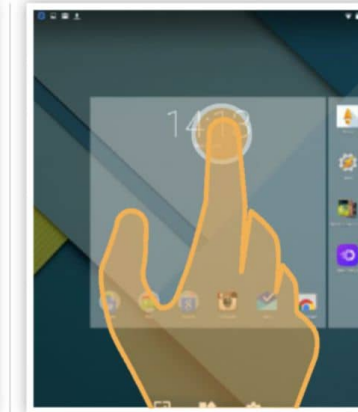
## Touch Screen Controls

Modern Android devices no longer rely on physical pressure to register a touch, instead relying on tiny electrical charges in our fingers.



### Single Touch

▶ Tap the Chrome icon to open the app. The familiar Google search screen should open first, with recently opened or frequently opened websites as thumbnails below. If you're using the app for the first time the screen will be blank. To start searching for websites, type in the search field.



### Touch and Hold

▶ Touch and Hold means to tap an item on the screen and not lift your finger until a secondary action occurs. This could be a menu opening, allowing you to customise the home screen, or an icon lifting off the screen and showing that it can be moved. Another useful tip is that when typing using the Android keyboard, touch and hold will reveal alternative uses for several keys.



### Touch and Drag

▶ To drag items around the screen touch and hold an item for a moment and then, without lifting your finger, move your finger across the screen until you reach the required position. Lift your finger off the screen and the item will drop into that location, if it's free. You can drag items on the home screen to reposition them and you drag down the screen to open the Notifications panel.



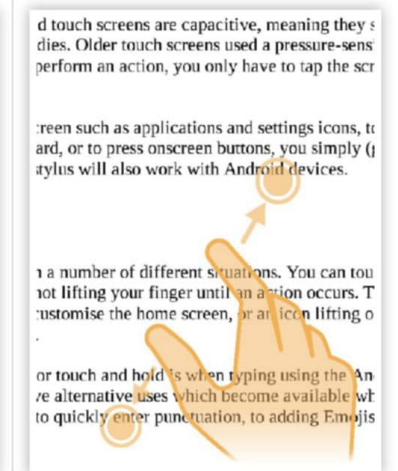
### Swipe or Scroll

▶ Many of the menus or web pages that you can access on Android require you to scroll. To swipe or scroll, quickly move your finger across the surface of the screen, without pausing when you first touch it. For example the app drawer lets you slide the screen up or down to scroll through the list and in Calendar, you can swipe quickly across the screen to change the range of time visible.



### Double Tap

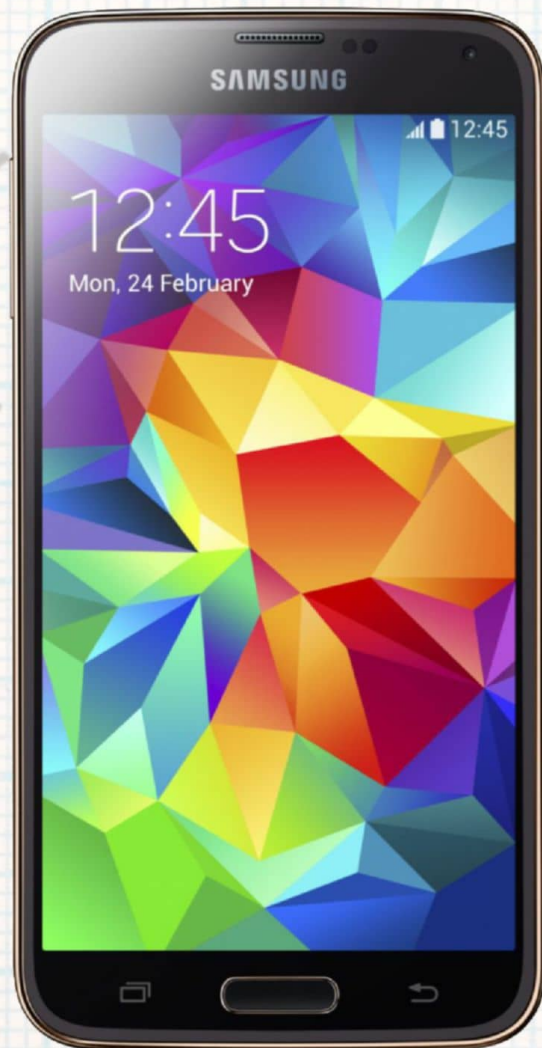
▶ There are several situations where a double-tap results in an action. Tap quickly twice on a web page, map or other screen to zoom. You can double-tap a section of a web page in the Browser to zoom that section to fit the width of the screen. Double-tapping after pinching to zoom in some applications such as the Browser, reflores a column of text to fit the width of the screen.



### Pinch and Rotate

▶ In some applications such as Maps, Browser and Gallery, you can zoom in and out by placing two fingers on the screen at once and pinching them together to zoom out or spreading them apart to zoom in. Two fingers can also be used to rotate the view of a picture or map for example, in several apps. The picture follows the rotation of your fingers and turns clockwise or anti-clockwise.



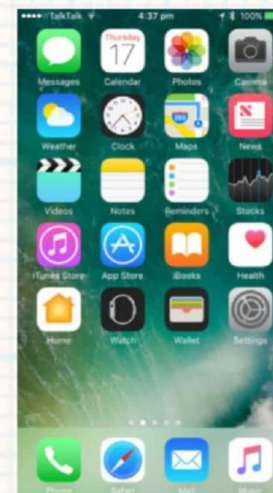


# iPhone vs Android

Making the switch from iPhone to Android can be a tough decision, particularly if you have been using your Apple device for a long time. It is, however, the right decision! Android can do everything as well as or better than iOS and you're not stuck with a choice of just a few handsets. It's up to you if you want to make the home screen simple or complex, or to choose a phone with a larger or smaller screen. This guide will show you the differences and the similarities between Android and iOS and hopefully make the transition as easy as possible.



## User Interface



### iPhone:

► The phrase "If you have seen one, you have seen them all" could almost have been coined for the iPhone. The main iOS interface and home screen set up has changed little since the first iPhone was released and is one of the main things that makes Apple's device so popular. App shortcuts are laid out in a simple grid pattern but you do have full control over the order they are displayed, as well as control over which notifications appear in the notifications pull-down menu. Over the past few years, iOS has introduced hidden tricks such as the multitasking menu and notifications available from the lock screen.



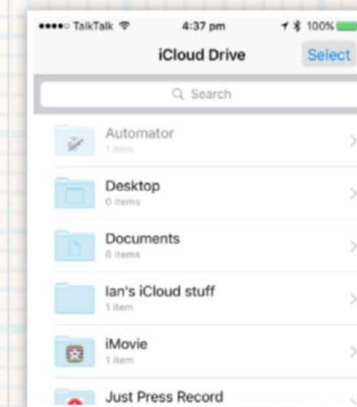
### Android:

► Google have from the start, encouraged customisation, allowing handset manufacturers to overlay the stock Android UI with their own (called a Launcher). This means that the same version of the OS can look very different on phones from Samsung and HTC, for example. What Android offers, no matter which handset it is running on, is a huge level of freedom for users to adapt the way their phone looks and behaves to suit themselves. Whilst this does require a bit more work from the user, being able to decide for yourself whether you want a hugely complex home screen full of widgets, shortcuts and folders or a simple grid of app shortcuts, is part of what makes Android great.

## Synchronisation

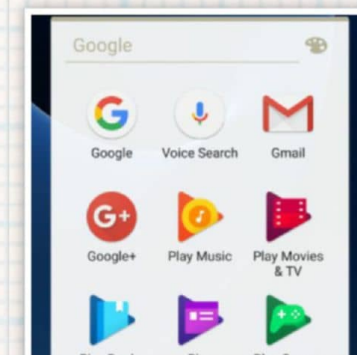
### iPhone:

► The iPhone and iOS allow a good level of synchronisation with other Apple software. You can sync your playlists from iTunes, share calendar entries between the phone app and iCal and upload images and videos to iCloud. You can sync Gmail and download numerous other Google apps from the App Store. For the best level of synchronisation you really need to have a Mac at home but there is still a lot you can do if you have a PC.



### Android:

► Android is based around a single Google Account although you can sync more than one at a time if you wish. Once you are logged into this you get instant account-based access to Gmail, Google calendar, Google Docs and Drive, Google Maps and so much more. Synchronisation is therefore incredibly easy, especially if you already use some or all of these completely free and incredibly popular tools on a day-to-day basis.







## Multitasking



### iPhone:

► iOS allows multitasking of a sort. By double-tapping the Home button you can bring up the Multitasking screen. This shows you thumbnails of recently closed apps and allows you to quickly reopen those apps with a single tap. If you hold your finger on one of the app icons, you have the option to close it. In reality, iOS forces any apps not currently being used to go into a suspended state unless they use a specific function that iOS allows. Whilst this is getting closer, it can't really be called full multitasking. However, it does help to keep the system stable and reduce battery usage.

### Android:

► Android multitasks in a way more like that seen on home computers. Recent versions of the OS introduced a more advanced Recent Apps menu which allows you to easily see apps that were recently closed and reopen them or close them fully as you wish. Even before this, Android was very good at keeping apps running in the background to make transitions between apps as quick and smooth as possible. Every generation of the Android OS has become better at managing multitasking, reducing strain on the system and the battery. That said, background apps use very little processing and therefore, battery power anyway.

## Browser

### iPhone:

► The Safari browser included in iOS always had a slight speed advantage over the old standard Android Webkit browser and newer versions of iOS have seen that gap increase even more over the older Android OS browsers. Safari is a very good browser and will certainly continue to improve.

### Android:

► Thankfully, the old Webkit browsers on Android have now almost completely been replaced by Google Chrome, by far the most used mobile browser in the world. Chrome is fast, secure and includes lots of great features such as find in page and incognito tabs and it synchronises perfectly across mobile and desktop versions.



## Apps

### iPhone:

► The iPhone and App Store have been around for slightly longer than Android and the Google Play Store (or Android Market as it was originally known) and has been seen as THE system to develop for in the past. The App Store now boasts an impressive 2,000,000+ apps and games and continues to grow at a steady rate. Apple tends to hold a tighter rein on app developers, so you won't find apps for Jailbroken iPhones on the App Store, which could be seen as both a good and bad thing.

### Android:

► It may have started later and taken some time to catch up, the Google Play Store now features slightly more apps than Apple's App Store. Featuring an estimated 2,200,000+ apps and games, the Play Store has now matured into the biggest app store around. Nowadays there are very few apps, aside from some of those developed by Apple and Google, that cannot be found on both systems. Certainly the big name app developers nearly always create apps for both OS's and even if you can't find the exact same iOS app on Android, 99 per cent of the time there will be one that does exactly the same job.



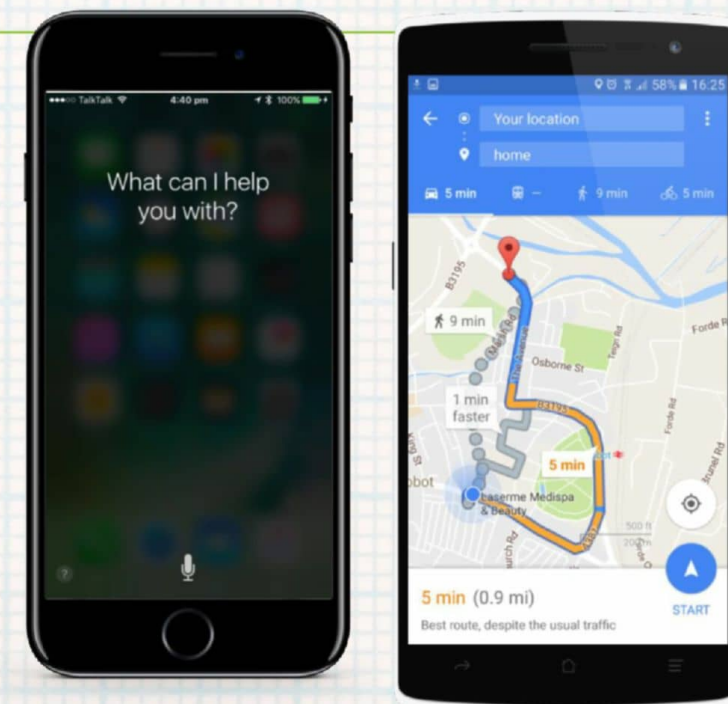
## Specialities

### iPhone:

► The line between the different OS's is blurring all the time but each still retains its own unique features and specialities. For a while iOS had Siri, the much talked about and hyped virtual assistant, as a unique feature over everyone else. Now, every mobile OS features some sort of personal assistant app: even the Windows Mobile OS has Cortana. The mobile arms race continues with things like wireless earbuds, better displays and improved cameras but there is very little that iPhone does that one or more Android handsets can't match.

### Android:

► Android's big advantage has always been, and continues to be, the wide range of brilliant Google apps that come with it. Free Sat Nav with turn-by-turn instructions in Google Maps, a fast and efficient Gmail app, Google Assistant, Google Translate and so much more. The freedom for device manufacturers to add their own unique features to their phones (and the UI that they provide) means that there tends to be more innovation on Android too.





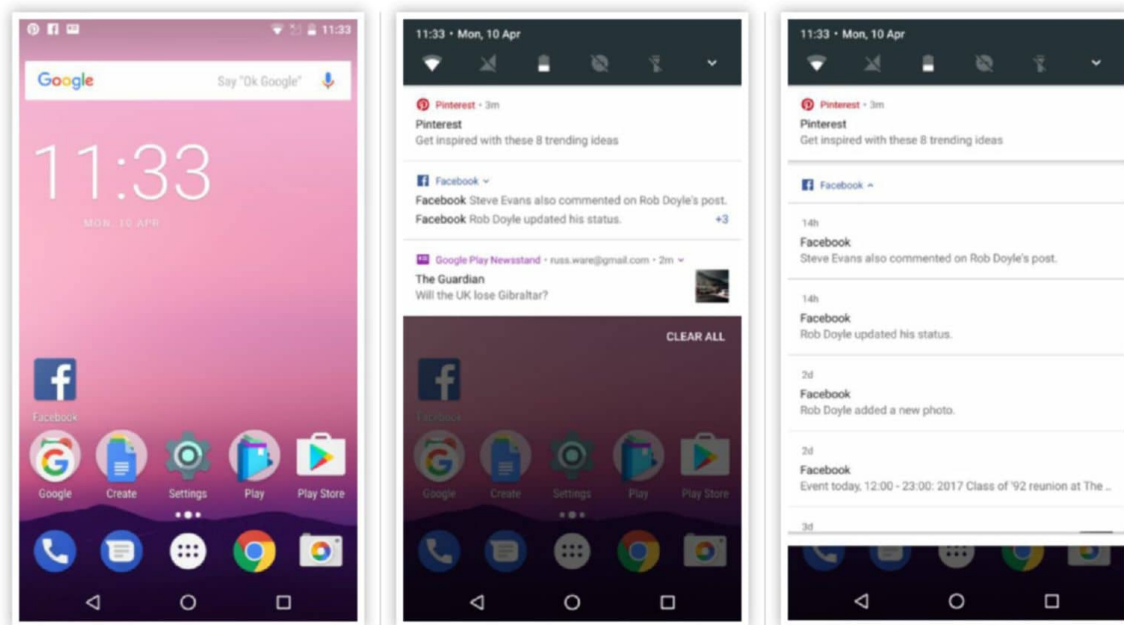


# Explore Google Nougat

Android Nougat (version 7.0) has been rolling out to phones and tablets for a few months now and if you have a newer device or one of the Nexus or Pixel devices from Google, you should have had a chance to see how it improves on the previous version. Unlike Marshmallow (Android 6.0), which was more about performance boosts, Nougat brings with it some truly new and unique features. Not all of them are instantly obvious, so let's take a look at the best.

## Bundled Notifications

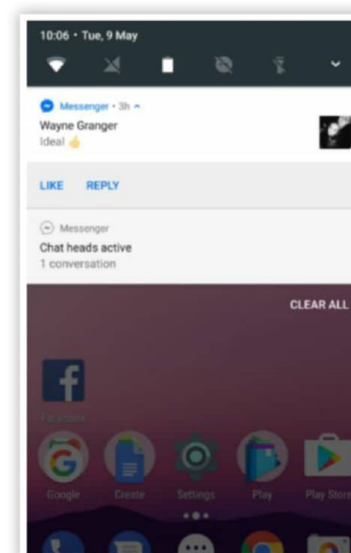
Notifications have had a significant overhaul in the latest version of Android, all designed to make them easier to use and interact with. Bundling notifications is the first of the changes.



**1** Bundled Notifications is a better way for Android and Android users to manage how notifications arrive and how they alert us. If for example you have a notification for Gmail and then ten minutes later another email arrives, you will be notified of the first but not the next.

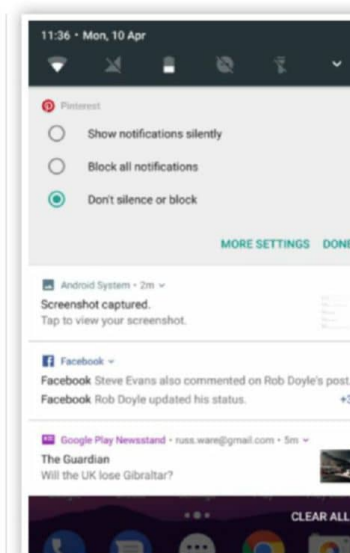
**2** The second email is bundled up with the first email, so it is still there when you drag down the notifications shade, it just doesn't audibly alert like the first one does. A new notification from another app, such as Facebook, will be treated like a new alert.

**3** Bundled notifications display as a list but you will be able to drag down over the list to expand the view into separate notifications, and then tap one to reply to it. Once viewed and cleared, the bundling process begins again. Not all apps allow bundling but most of the main ones do.



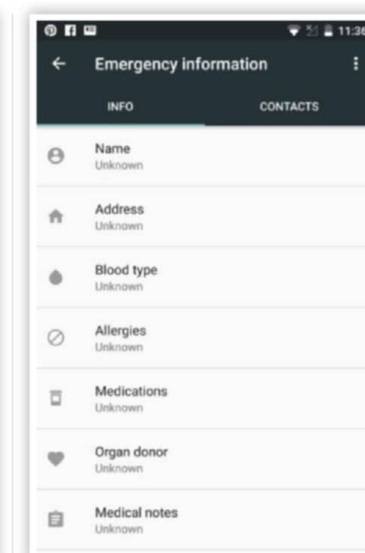
### Direct Reply Notifications

Nougat lets you reply to messages from apps like Facebook Messenger, Hangouts or Messenger directly from the notification shade and means less switching between apps. This feature isn't limited to messaging apps. For example, Twitter could add the ability to reply to mentions.



### Notification Controls

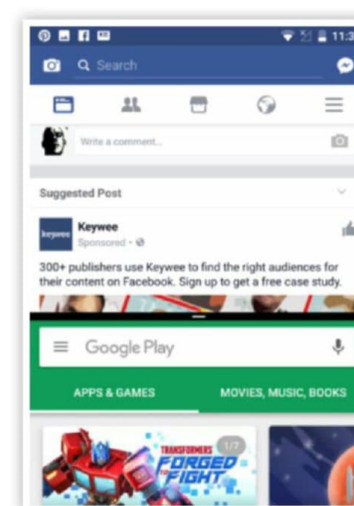
Notification controls let you manage individual notifications on the fly, from within the notifications panel. For instance, you can silence future alerts from the Gmail app in the Gmail notification itself. When a notification pops up, just press and hold on it to toggle the settings.



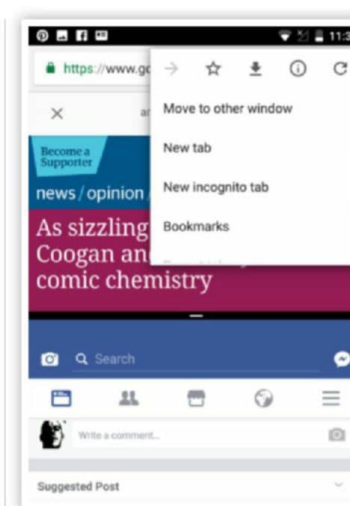
### Emergency information

Emergency Information lets you add information such as name, blood type, allergies and an emergency contact so that emergency responders can view this information through your device's lock screen. You can find this feature in Settings > Users > Emergency Information.

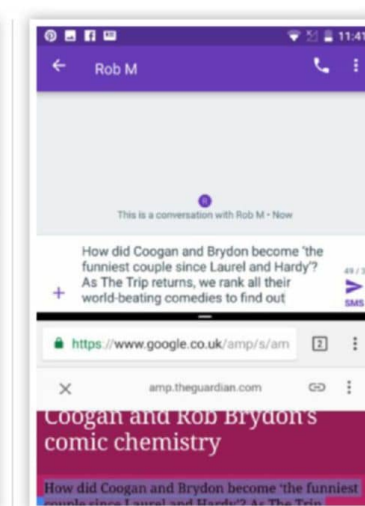
## Multi-Window



**1** Anyone running Android Nougat can now take advantage of a feature Samsung Galaxy users have had for a while. Multi-Window allows you to split the screen on your device, displaying one app in the top half and a second app in the bottom half of the screen.



**2** Multi-window has some clever tricks built into it, one of which is the ability to move certain apps over to the other window without leaving the dual view. For example, when using Chrome in multi-window mode, tap on the Menu button and select the 'Move to other window' option.

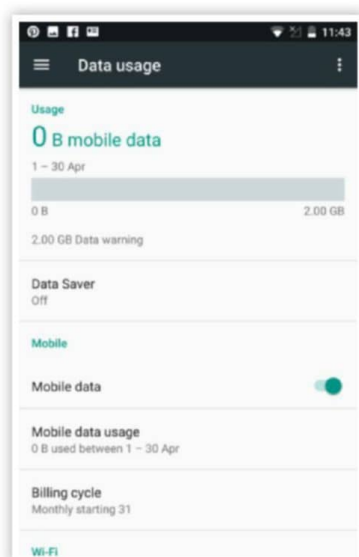


**3** You can also drag and drop text and images between two open windows in Multi-Window view. This could be used to grab a paragraph of text from a website open in Chrome and drag it quickly into the second window where Gmail is open. This is another great multi-tasking boost for Android.

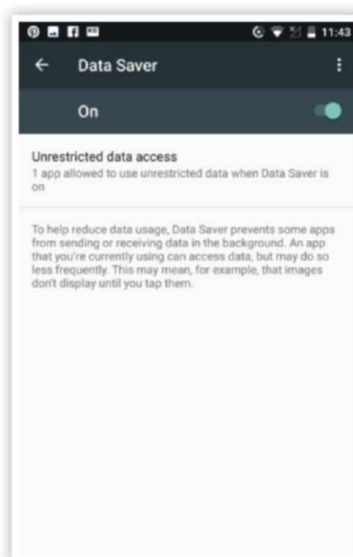




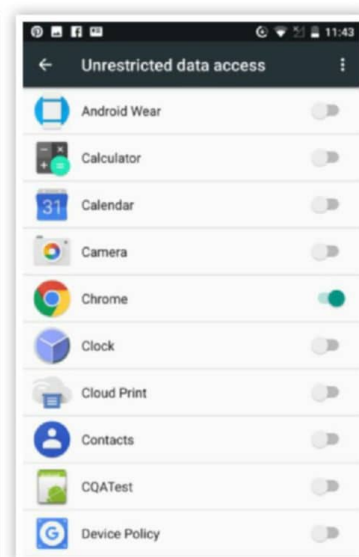
## Data Saver Mode



**1** Over the life of a smartphone, the cost of a cellular data plan can easily exceed the cost of the device itself. With Android Nougat on their device, users can enable Data Saver on a device-wide basis in order to optimise their device's data usage, and use less of it.

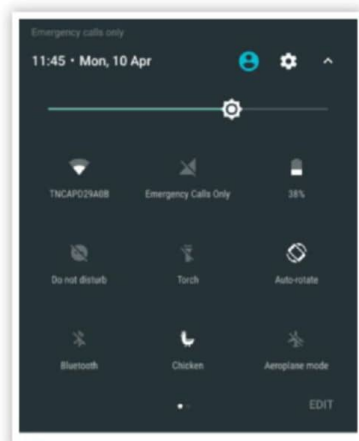


**2** This ability is especially useful when roaming, near the end of the billing cycle or with a small prepaid data pack. When Data Saver is enabled and the device is on a metered network, the system blocks background data usage and signals apps to use less data in the foreground wherever possible.

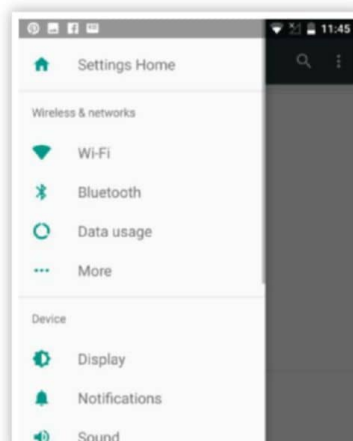


**3** Users can whitelist specific apps to allow background metered data usage even when Data Saver is turned on. Open Settings > Data Usage > Data Saver and tap 'Unrestricted data access'. You can then choose which apps are allowed to use data unrestricted when Data Saver is On.

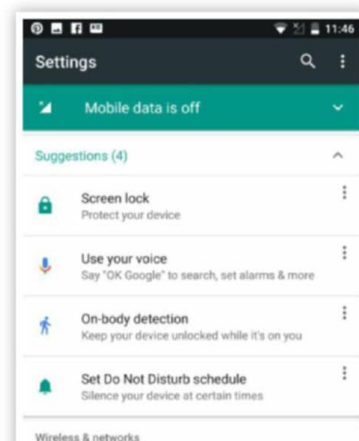
## Improved Settings Navigation



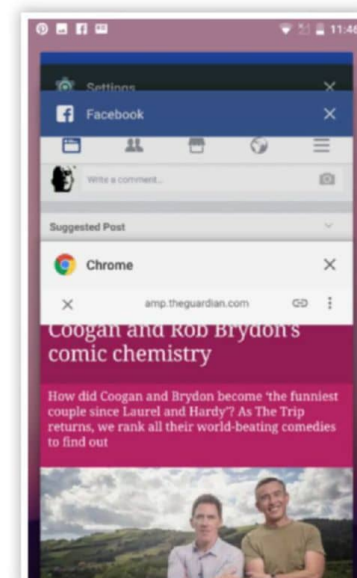
**1** Quick Settings has been redesigned so that you can get faster access to top Quick Settings tiles directly in the notification shade. Drag down once to see the most used Quick Settings, drag down over it again and you can see the full menu, including the edit button to add new settings.



**2** The main settings app has also been given an overhaul. You can find the right setting faster with an updated navigation menu which slides out from the left of the screen. You could be looking at the settings for Wi-Fi and then drag through the menu and quickly switch to Account settings.

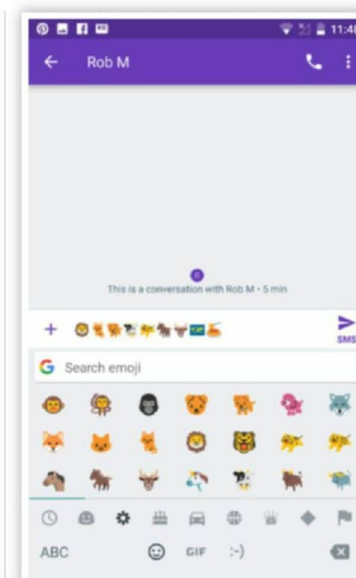


**3** Settings now includes suggestions. Within Settings, the suggestions advise how to get even more out of your device. These change and update depending on the setup of your device and you can remove suggestions by tapping the menu icon on the right and choosing Remove.



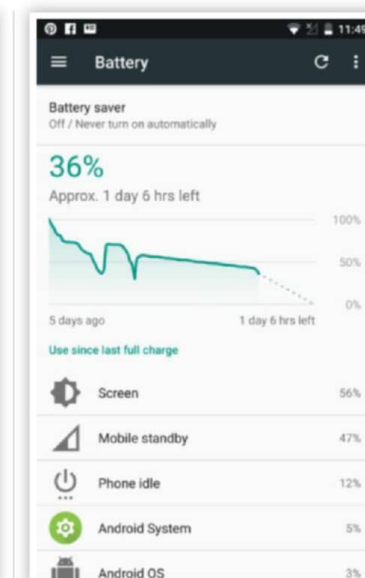
### Quick Switch

The multi-tasking button on your Android device now doubles up as a Quick Switch button. This allows you to quickly switch between the last two apps you used with a simple double-tap of the button. If there are no apps in the multi-tasking menu, the quick switch will not work.



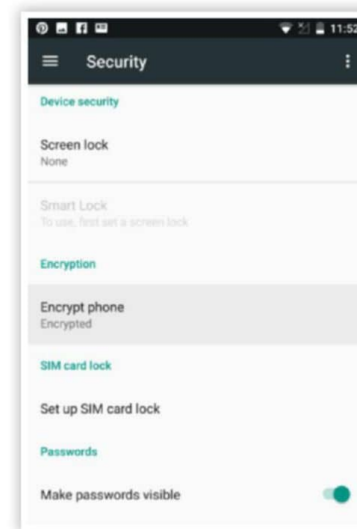
### New Emoji and Multi-Language

Android Nougat now includes more than 1500 different emoji, including 72 brand new ones for this version of the OS. As well as that addition, you can now set two or more languages in the settings and very quickly and easily switch between them when typing a message by tapping the globe icon.



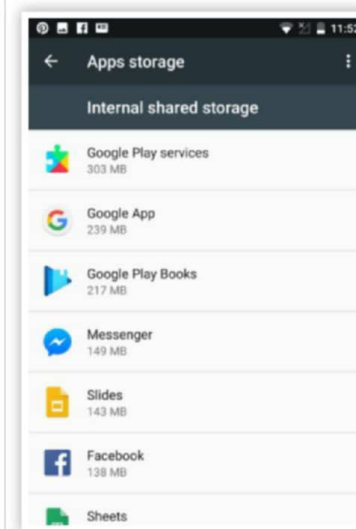
### Doze on the Go

Doze, which was introduced in Marshmallow to help reduce battery drain, is now helping save battery power even when you're on the move. That means your Android device will conserve battery even when it's jostling around in your pocket or handbag, not just when it is static.



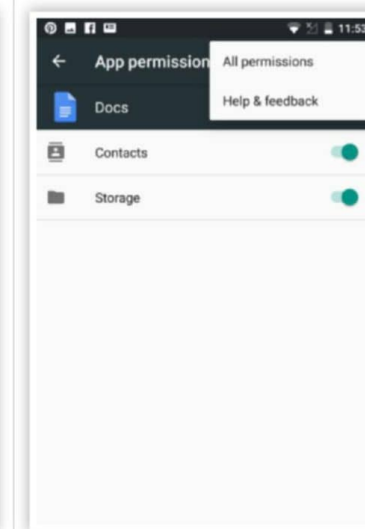
### Direct boot

When restarting your device, Direct Boot helps it start up faster and ensures that important communications still run. So before you even put in your password, you still get that important text message and hear your alarm clock ring.



### File-based encryption

Building on top of the existing security platform, Android Nougat introduces file-based encryption. By encrypting at the file level instead of the block level, Android can isolate and protect files better for individual users on their device.



### Scoped folder access

Apps can request access to specific folders that you can allow or deny access to. This is a reduced-scope version of the Storage permission for Apps that only need access to certain folders. It can also allow Apps to request direct access to removable media (on devices with that hardware).



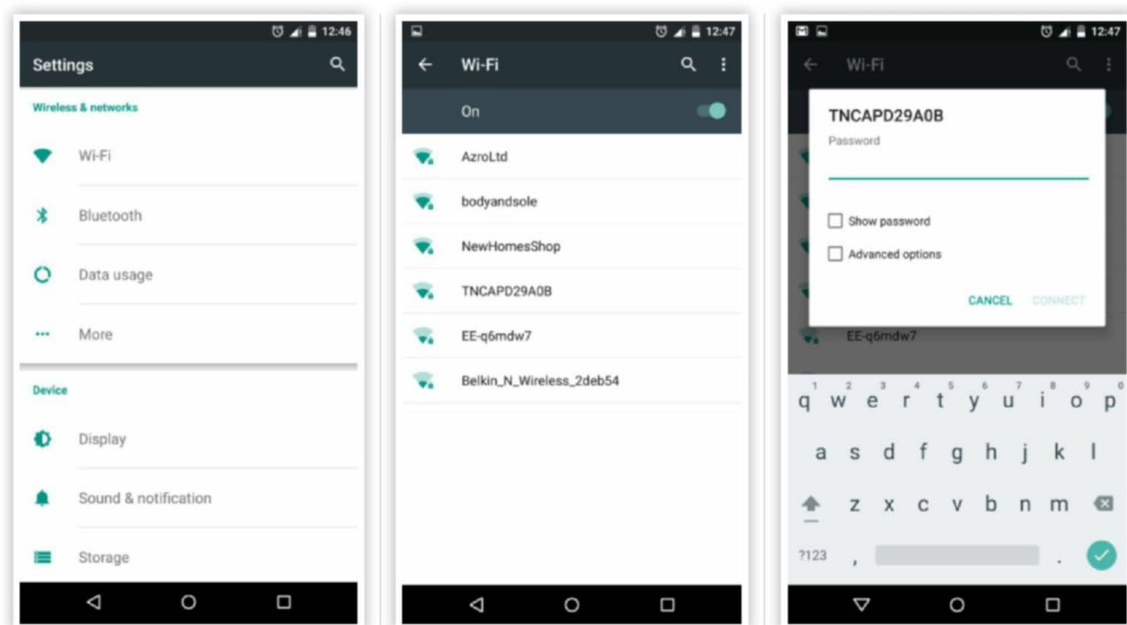


# Connecting to Wi-Fi Networks

Connecting your Android device to the Internet is certainly going to be one of the first things you will want to do. You have a couple of options for connecting to the Internet on Android. If you have access to a Wi-Fi network at home, in work or elsewhere, this is the best option in terms of speed and reliability. By following these steps, setting up your Wi-Fi connection should be relatively pain-free.

## Scan For Networks

You need to make sure that you know the name of, and the password for, your chosen Wi-Fi Network. If you don't know already, you can usually find it printed on a label stuck to the back or bottom of your wireless router.



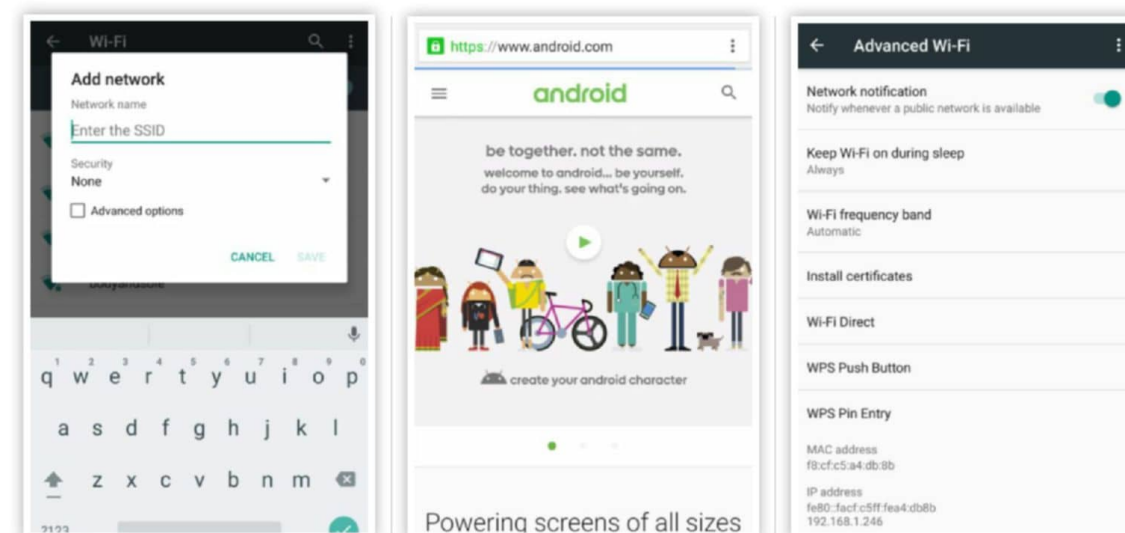
**1** Open the Settings app and look for the Wi-Fi heading. Before you can start to find your Wi-Fi connection, you will need to turn the feature on. Drag the slider to the right.

**2** Now tap the Wi-Fi heading. The device will scan and any networks within range will appear in a list. Next to each is indication of signal strength and whether the network is secured.

**3** Hopefully you will see your Wi-Fi network in the list (if not, tap Scan to try again to find it). Tap the name of your network and you will be prompted to enter your Wi-Fi password.

## What is Wi-Fi?

Wi-Fi is a way of connecting to the Internet, via a wireless router, without having to be connected to a broadband socket.



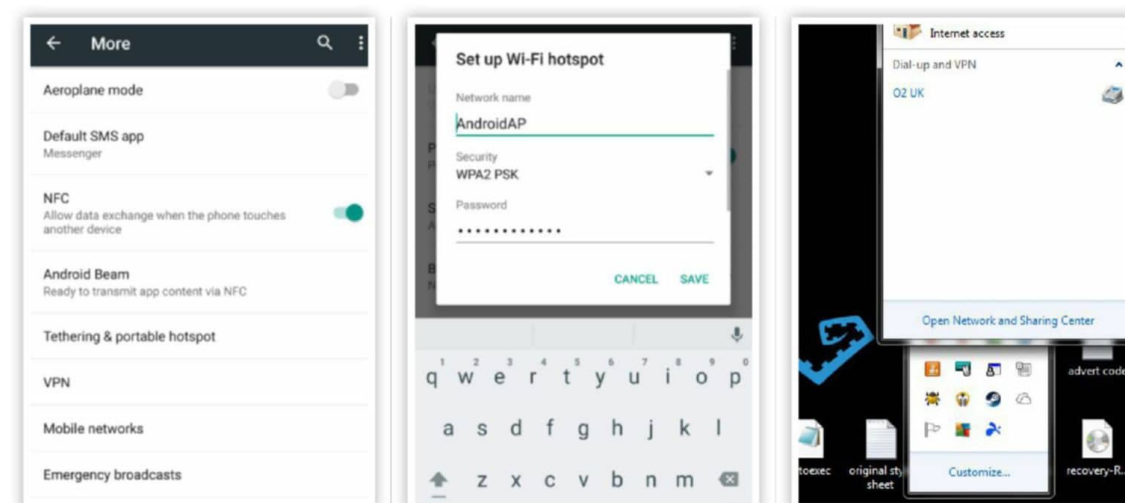
**4** If you can't see your network in the list of networks, tap the Add Wi-Fi Network button. You will then need to type in your Network SSID and select the security type (normally WEP or WPA).

**5** Your phone will now connect to the Wi-Fi network. The Wi-Fi icon will then appear in the top status bar. When you next turn Wi-Fi on, it will automatically choose this network, if in range.

**6** Android lets you choose whether your phone notifies you when a public/accessible Wi-Fi network is in range. This is useful if you travel or work on the road a lot. Turn this on in the Advanced Wi-Fi settings.

## Set Up a Wi-Fi Hotspot

Despite how it may sound, a Wi-Fi Hotspot does not allow you to connect to the Internet using Wi-Fi, but rather allows you to use Wi-Fi to connect a PC or laptop to your phone and, through your phone's data connection, connect to the Internet.



**1** Open Settings > Wireless and Networks and then scroll down until you see Portable Wi-Fi Hotspot or a Hotspot and Tethering option. The option name may vary slightly between handsets.

**2** Now either touch the option called Portable Wi-Fi Hotspot Settings, or slide down the notification bar and choose Configure Hotspot. Here you will be able to set the SSID (name) of the hotspot and set a password to stop anyone else jumping on your connection.

**3** Using any Wi-Fi enabled PC or laptop, search for available Wi-Fi access points and you should see the SSID of your new hotspot. Enter the password you set on your phone and you will be connected to the Internet.



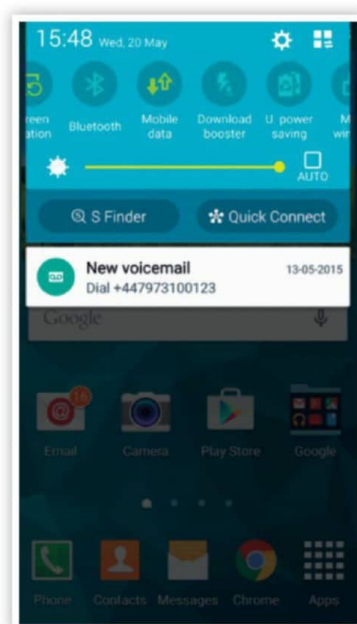


# Your Mobile Data Connection

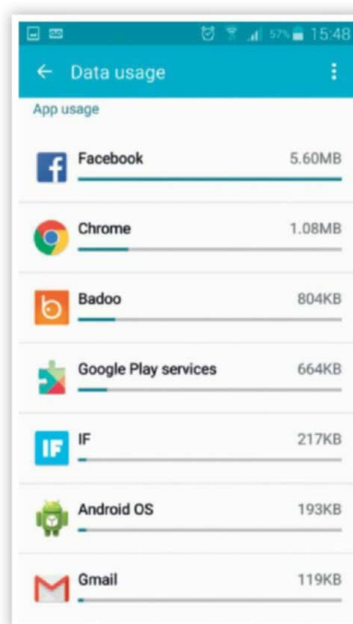
If you are away from an available Wi-Fi network, connecting to the Internet usually means using your 3G or 4G mobile data connection; but with unlimited data packages nowhere near as common as they once were, it makes sense to ensure that you understand how mobile data works and how to keep track of your mobile data usage. This can be done fairly easily using monitoring tools built in to the Samsung Galaxy phones and tablets.

## Open a Data Connection

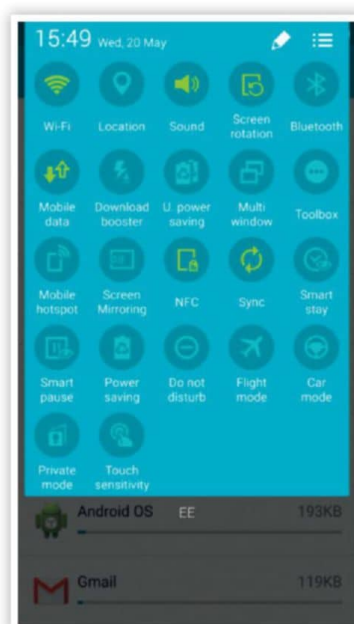
As long as your device has a working SIM card inserted, you should be able to connect to a mobile data network. If not you should speak to your mobile service provider/carrier.



**1** Your mobile data connection can be activated using the button in the quick settings on the notification panel, or you can go into the main Settings and turn it on via the Network Connections category.



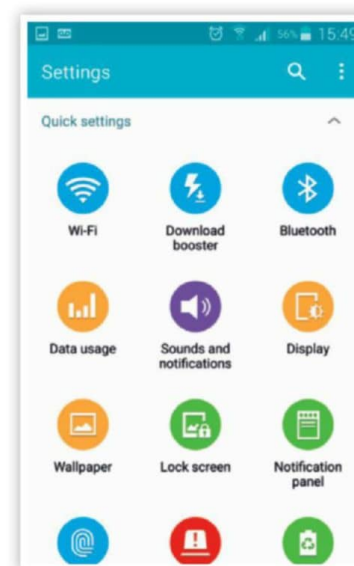
**2** When connected to your mobile data connection, it is worth having a look to see which apps or features are allowed to use the connection for downloads. Tap the Menu button and you can see if data roaming and auto-sync are enabled.



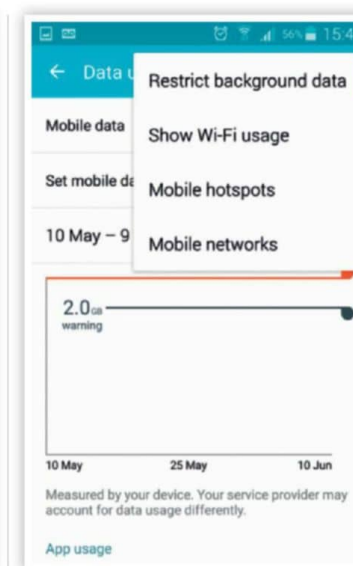
**3** If you connect Wi-Fi and mobile data at the same time, your device will always try to use the Wi-Fi connection before the data connection. Having both connections open all of the time will, however, use more battery power.



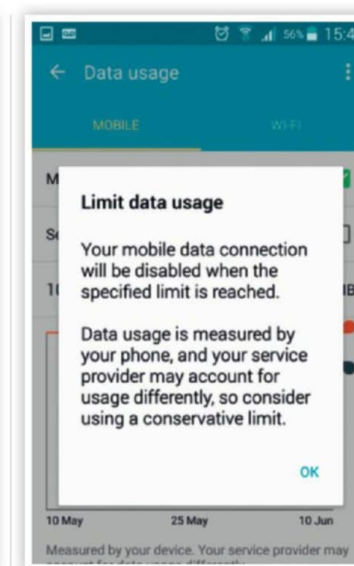
## Checking Data and Wi-Fi Usage



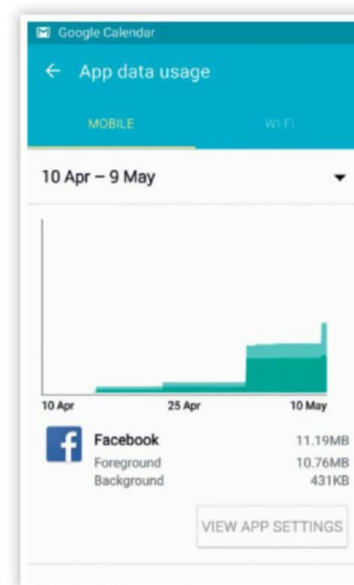
**1** Open the main Settings app and tap the Network Connections tab. Tap the Data Usage option from the list shown. By default, the graph here shows the amount of data used in a set period. Below the graph is a breakdown of the apps which have used the data.



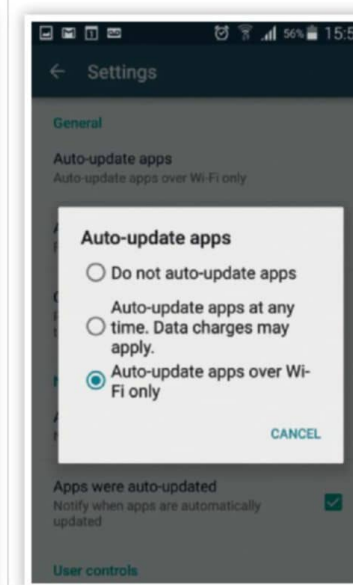
**2** Tap the Menu button at the top of the screen and tick the box next to Show Wi-Fi Usage. This adds a second tab to the main screen to show Wi-Fi usage, again over a set period. You can change the period shown using the horizontal sliders.



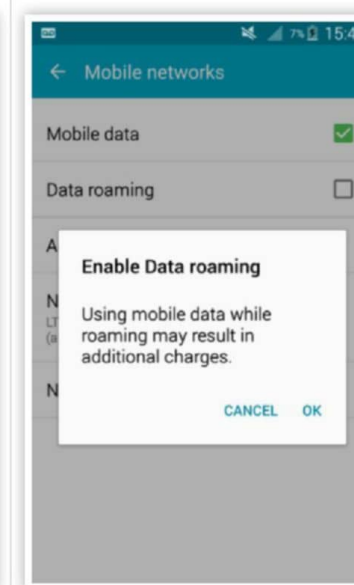
**3** If your mobile data connection is open, you can set mobile data limits on the graph. Slide the warning and limit sliders up or down to meet your data allowance limits. A warning will appear when you meet those levels of usage.



**4** If you think a particular app is using too much mobile data, tap its name in the list in order to see more detail, including if the data used was foreground (you using the app) or background (the app updating/syncing automatically).



**5** Many apps allow you to restrict updates or syncing until you have a Wi-Fi connection, rather than using your data allowance. Tap View App Settings from the data usage screen of an individual app to check these settings and correct them if needed.



**6** Data Roaming, which is using a mobile data network other than that of your carrier (such as when abroad), can incur large costs. Unless you have a package that allows cheap data roaming, it is a good idea to make sure this is turned off. Go to Settings > Mobile Networks to check.





# Turn Your Device into a Mobile Hotspot

You can share your mobile Internet connection with nearby devices, including tablets and laptops, by turning your phone into a mobile hotspot. As long as the device has a SIM card and can connect to the mobile network, you can use it as a hub. You can do this with up to ten different devices at a time, depending on the quality of connection and model you are using, although this may put a strain on your data usage.

## What is Pairing?

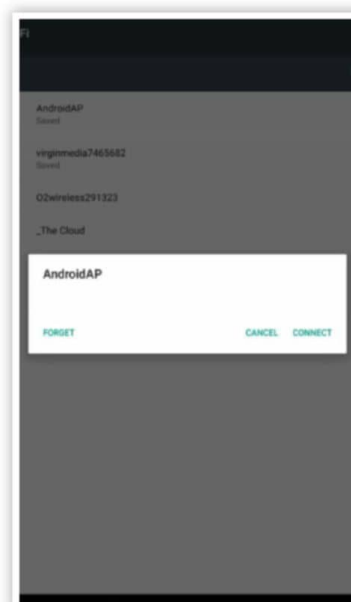
► Pairing devices or a device and peripheral ensures that the two can connect using Bluetooth more easily in the future.

## Sharing Your Mobile Internet

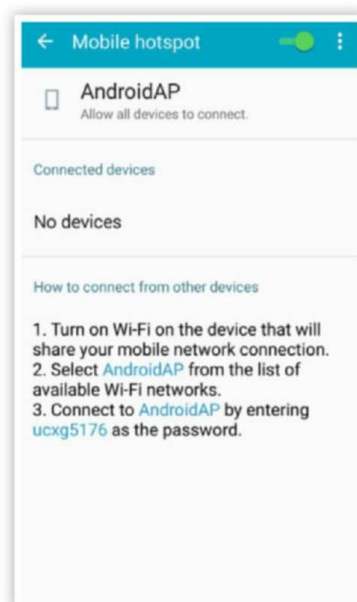
The ability to tether or share your Internet connection depends on your mobile device and your operator, although most carriers (and devices) will let you do this these days, even if your data is limited.



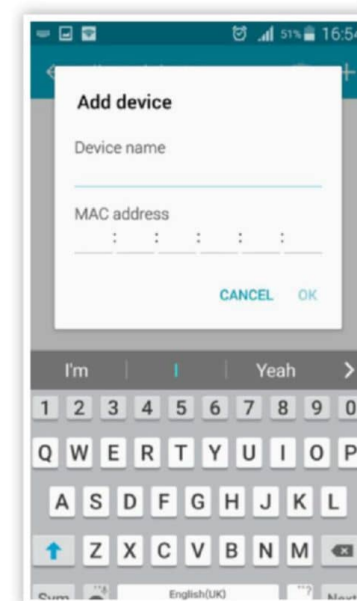
**1** ► Open the main Settings app on your device and look in the Connections section for Tethering and Mobile Hotspot. Open the menu and tap Mobile Hotspot. You will see a slider to turn the mobile hotspot on. When you turn on mobile hotspot, any Wi-Fi connection open will be turned off.



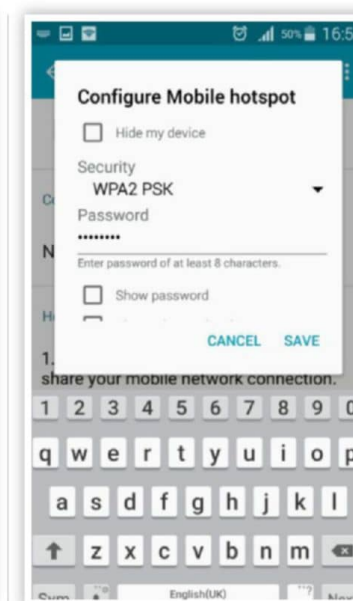
**2** ► You now need to turn on the Wi-Fi on the device you want to connect to the Mobile Hotspot (your non-3G tablet or laptop, for example). When the list of possible Wi-Fi networks appears on the connecting device, you need to look for the one labelled "AndroidAP".



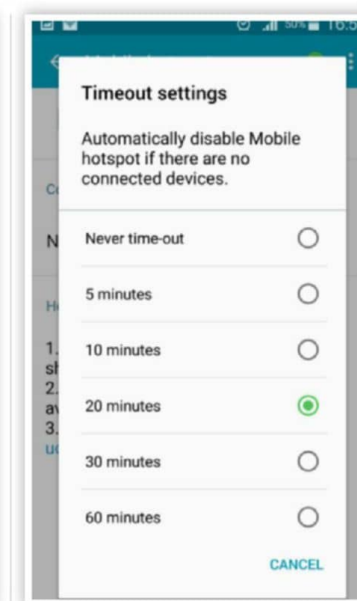
**3** ► The password you need to use to connect to the hotspot will be displayed on the main device (the device hosting the hotspot). Enter the password exactly as displayed and wait for the connection to complete. You can now use the second device as if it is connected directly to the Internet.



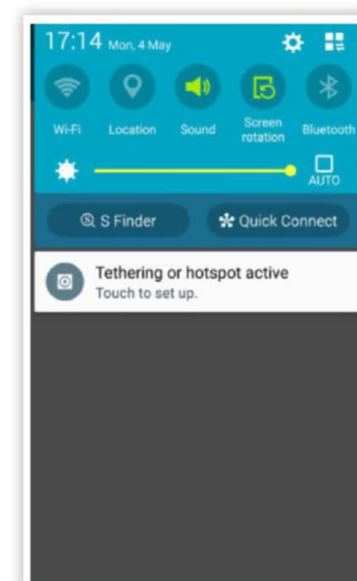
**4** ► You can limit the devices able to connect to your mobile hotspot. From the Mobile Hotspot screen, tap the Menu button and select Allowed Device List, or tap the Configure button at the bottom of the screen. Tap the + button and enter the device name and MAC Address.



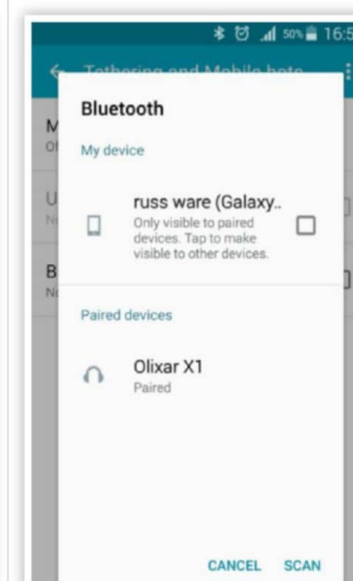
**5** ► If you don't want to use the preconfigured hotspot settings (such as the name and password) you can enter your own. Before activating the hotspot, tap the Menu button and then Configure Hotspot. You can then enter your own settings, including the security type and password options.



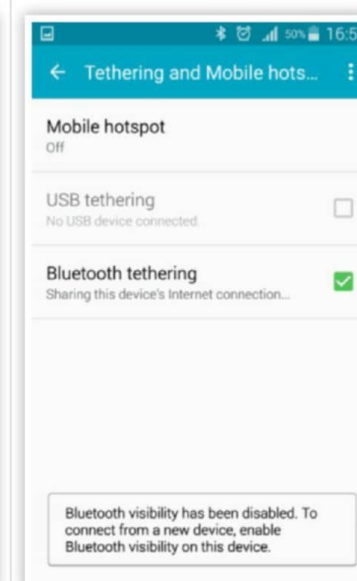
**6** ► You can also set timeout settings. This means that the hotspot will be disabled after a set time if no devices are connected to it. The default setting is normally 20 minutes. You can change this to anything from never timeout to 60 minutes.



**7** ► Tethering is similar, but uses either USB or Bluetooth as the connection. Plug the USB cable into your phone and connect it to your laptop or tablet. You'll be shown on screen whether a new network connection needs setting up on your laptop.



**8** ► Before you can tether using Bluetooth, you will need to pair the two devices in the normal way. Turn on Bluetooth on both devices, scan on the second device to find the first, and pair it. Now open the Bluetooth settings and choose Share Internet Connection.



**9** ► To stop sharing your data connection, uncheck the box or turn off the switch next to Bluetooth Tethering in the Settings menu. You can also just use the Quick Settings panel to turn Bluetooth off and break the link. Your phone will still be connected to the mobile data network.





# Adding and Syncing Accounts

When you set up your Android phone or tablet, you will be asked to link it to a Google account. If you don't already use one of the Google products such as Gmail, Picasa or YouTube (if you use any of these, you already have a Google account), or if you want to create a new account to use with a new tablet for instance, you can create one on your device during the setup. It is easier, however, to set up an account on your computer.

## Creating a Google Account

You can easily find anything you want to do in Google, by simply searching using relevant terms. For example, if you want to find the Google+ account page, simply search for "Google+ Account" in your browser.

1 Using any Internet browser, navigate to <https://accounts.google.com> and click on the Sign Up button in the top-right corner of the screen. Alternatively, search for "Google Account" in any search engine. Enter your name into the boxes provided and choose your preferred gmail.com email address. This will be your future username for Android.

2 If the name you want is already taken, you will be shown some alternatives. Or you can try another of your own. Complete the remainder of the information, including a phone number and alternative email address (useful if you need to recover your login info). You will also need to complete a CAPTCHA form and agree to Google Terms of Service.

3 Add a profile picture if you wish (or you can add one later in Google+). Having a profile picture of yourself will help friends and family find you on products like Google+, Gmail chat and several other Google products. It will also, of course, appear as your avatar in Android accounts on your phone or tablet.

## What is a Captcha?

Captchas are included in a lot of online forms and are designed to make sure that it is a human filling out the form.

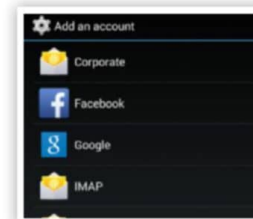


## Add a Second Account

Creating your Google account now will give you access to almost every Google product you need.

Adding and syncing a second account will not merge those two accounts anywhere but on your phone or tablet. In fact, nothing is ever synced between your Google accounts, allowing you to keep things nicely separate. To add another account to your device, go to Settings > Accounts and then tap the Add Account button. This screen shows all accounts associated with the device. Choose what sort of account you wish to

add from the options on the screen. As you can see, it is not just multiple Google accounts that you can add.



## Samsung Account Features

Setting up a Samsung account will enable various features on your Samsung, as well as several that you can use on compatible TV's, computers and more. Here are just a few of the services a Samsung account includes.

### Remote Controls

The latest smartphones and tablets contain a lot of personal data, so there is a high risk of revealing sensitive personal information if you lose it. Remote Controls can minimise the risk of losing your personal information by allowing you to lock and wipe your missing device remotely. Also, by using the Find My Mobile feature, you can hopefully find your missing device.

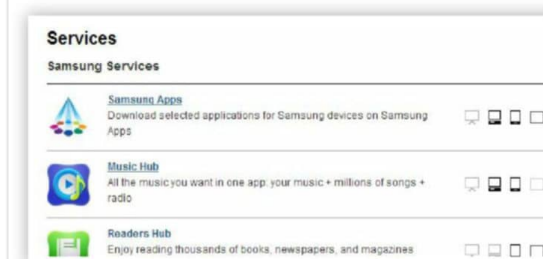


### Family Story

Family Story lets you share photos, memos, and events with your group members. Family Story groups provide a communication channel for a small group of up to 20 people. You can share photos of family moments and occasions to remember with group members. Photos can also be sorted by date, allowing you to enjoy specific images and recall treasured memories. You will need to download the Family Story app on your device before you can use it.

## Third-party Accounts

As well as a Google account, many device manufacturers encourage you to use their own service accounts. These can often add extra features and services. One of the most common, and the most useful, is the Samsung account.



1 On your computer, open the browser and go to <https://account.samsung.com>. This page lists many of the features you can take advantage of once you are signed up to your account.

2 Click on Sign Up at the top of the page. Read through the Terms & Conditions, tick the check box and then agree to them. If you don't agree to the Terms & Conditions, you unfortunately cannot continue.

3 Complete the sign up form by entering your email address (this can be your Gmail address if you wish), choosing a password and completing some profile information.

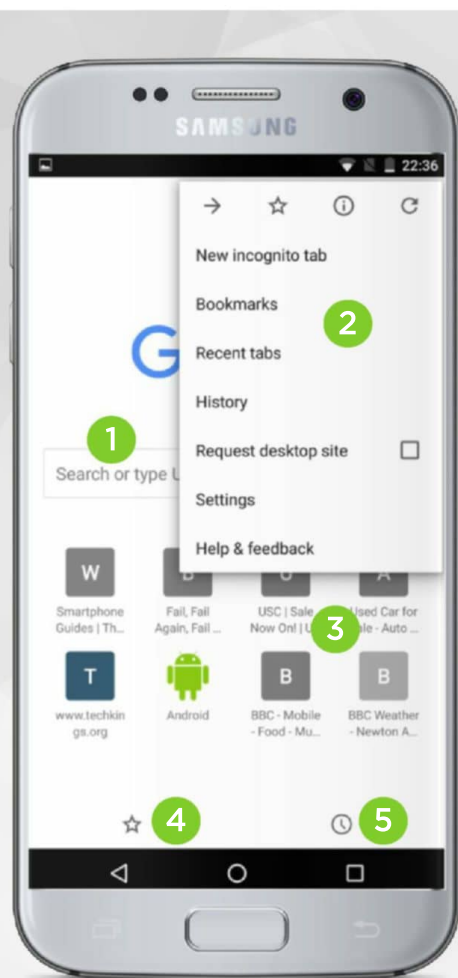
4 You will then need to verify your email address by looking out for the verification email sent from Samsung. Click the link in the email and then click Confirm on the web page that opens.





# Browsing with Chrome

The mobile version of Google Chrome is now the standard browser on most Android smartphones and tablets. The app will be preinstalled but you should check for the latest updates on Google Play before you use the browser on your device. Your device may have a second web browser app that is called simply Internet but Google Chrome is superior in almost every way.



## Browsing the Internet

Android devices used to have a standard browser and the Google Chrome browser but now most just have Chrome.

### 1 Search Field

► Type your search terms or URL here. You will also see a microphone icon, which when tapped allows you to search by voice.

### 2 Chrome Menu

► The menu button should always be visible and gives you access to the bookmarking button, page refresh and the forward and back buttons.

### 3 Recent Sites

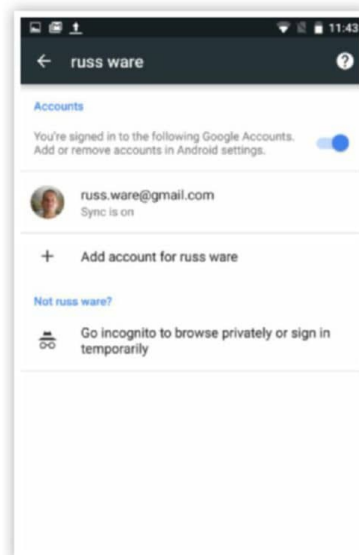
► Recently visited websites will be displayed as thumbnails on the opening screen of Chrome. Tap one to open that website.

### 4 Bookmarks List

► Tap the star at the bottom of the Chrome home screen to see your bookmarked websites. You can also access bookmarks through the menu.

### 5 History

► For a full browsing history, tap the clock icon. Browsing history from other devices will also be shown if they use the same Google Account.

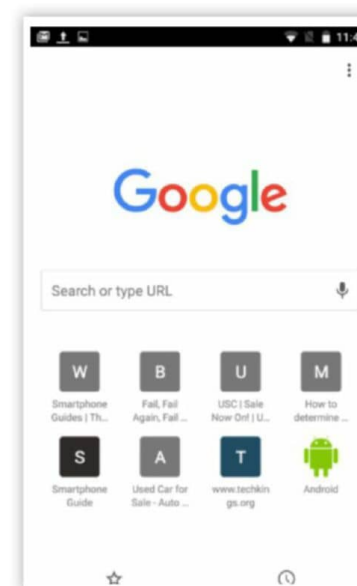


## Sync Between Devices

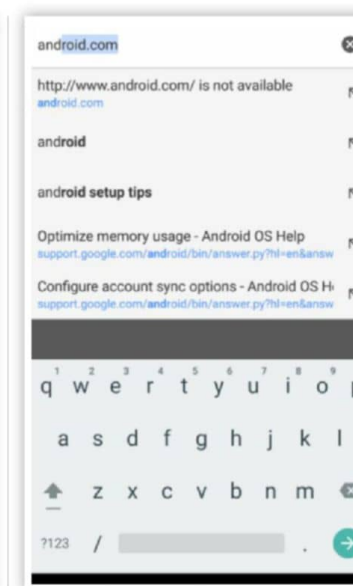
► When you're signed in to Chrome, you can see the tabs that you have open from other computers or mobile devices. Tap Menu > Settings > your email address. Tap Sync and make sure that the Open Tabs tick box is selected. To disable tab syncing, deselect the Open Tabs tick box.

## Multiple Browsers

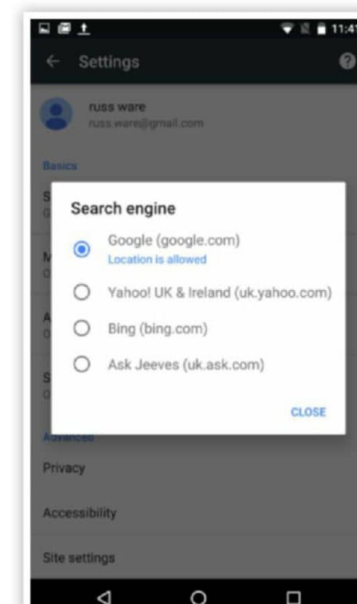
► Chrome is now the default browser on most Android devices but that doesn't mean that you can't add a second, third or fourth browser. This is useful if another browser offers a special feature such as low data use or ad blocking.



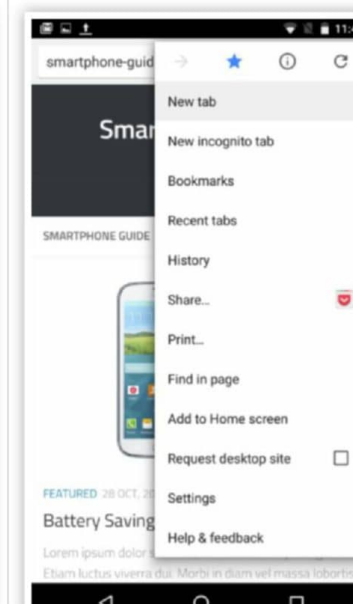
1 ► Tap the Chrome icon to open the app. The familiar Google search screen should open first, with recently or frequently opened websites as thumbnails below. If you're using the app for the first time, the screen will be blank. To start searching for websites, type in the search field.



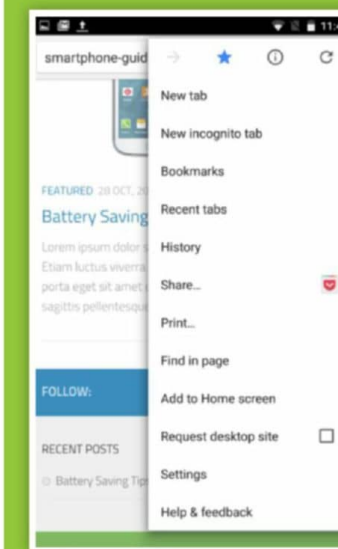
2 ► You can either type a search term or a URL if you know the address of the website you want to visit. As you type, Chrome will offer suggestions based on the words entered. Tap any of these to enter the word as your search term. If Location Services are active, local results will be shown too.



3 ► By default, Chrome will use Google.com, or .co.uk, etc. if in another region, as the search engine, so the results will be displayed in the standard Google format. You can change the default search engine in the Chrome Settings (Menu > Settings > Search Engine).



4 ► To make a new search and view another website whilst keeping the first one open, you can create a new tab. Tap the Menu button and then New Tab. You can then create a new search or use one of the recent thumbnails. To switch tabs, tap the Overview button.



## Request Desktop Site

► Chrome will automatically detect if a website has a mobile version and display the version appropriate to your device. If you prefer to view the original version of a website, you can force Chrome to do so. Open the site, tap the Menu button and check the box next to Request Desktop Site.



## Find in Page

► This feature, accessed through the Chrome menu, allows you to search an individual open web page for specific words or phrases. Tap Menu > Find in Page and then type the word in the search field that opens. The number of times the word appears is displayed and the arrows let you switch between instances.





# Searching with Voice Search & Actions

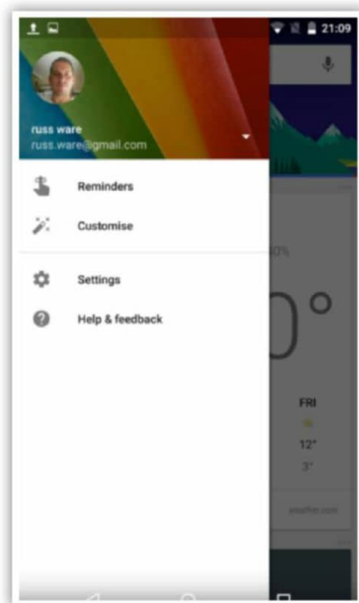
You can use your voice to do several things in Android, including searching in Chrome and Google Now. Talking to your phone or tablet may at first seem slightly odd but once you learn the power of this tool, its usefulness becomes clear. The normal way to activate voice search is to tap the microphone icon in the search box of an app but with Android Lollipop you can now start searches simply by saying “OK Google”.

## What is OK Google?

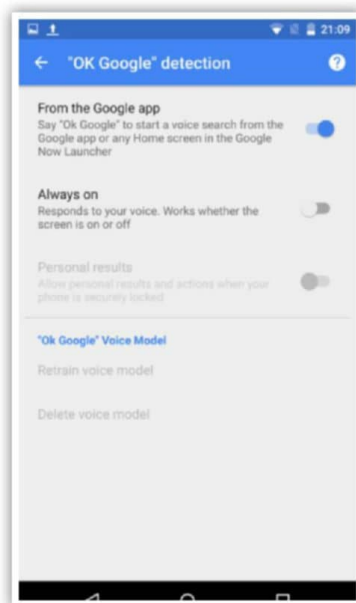
► Newer versions of the Android OS allow you to begin voice searching simply by saying the words “Ok Google” into the mic.

## Voice Search

Voice search becomes a very useful tool once you know how to activate and use it properly on your device. Some devices may have voice search already enabled, but it is worth checking.



**1** ► The first thing to do is ensure that voice search is activated on your device and that the settings are configured correctly. Open the Google app on your device and tap the menu icon in the top-left corner. Tap Settings and open the voice menu.



**2** ► If your device is compatible with the OK Google command, you will see settings for OK Google Detection. Here you can choose when you want your phone to listen when you say “OK Google”, and whether the device responds even if the screen is off.

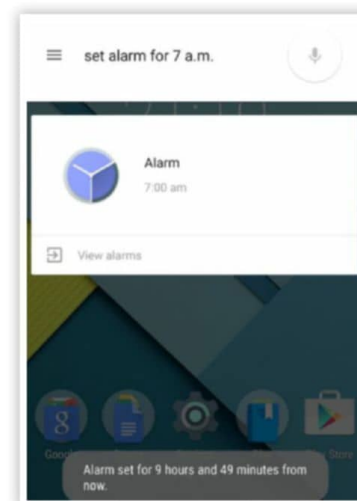


**3** ► You can now begin to voice search. You can do so from the home screen if there is a Google Search widget in place, or from the Google app (Google Now) if not. Either tap the microphone icon or say “OK Google”, followed by your search query, e.g. “How much do polar bears weigh?”



## Voice Actions

Here are some examples of the sort of voice actions Google can understand after you say “OK Google”.

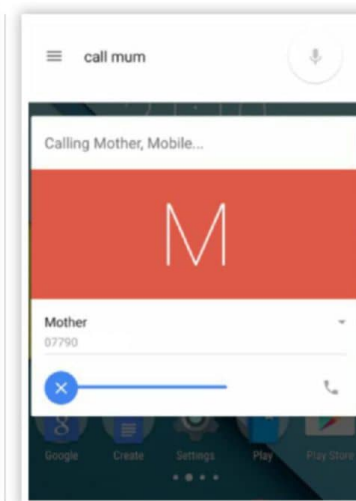


### Calendar & Alarms

**Set an alarm:** “Set an alarm for 7 AM” or “Set an alarm for every Friday morning at 7 AM.”

**Set a reminder:** “Remind me to call John at 6 PM” or “Remind me to buy chocolates.”

**Check your schedule:** “What’s my day look like tomorrow?” or “When’s my next meeting?”

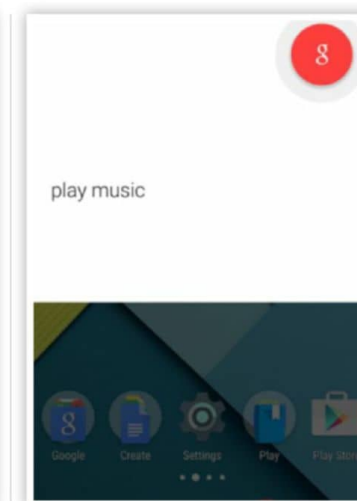


### Calls & SMS

**Call a friend:** “Call Lindsay Hampson” or “Call Mom.”

**Text a friend:** “Text Jason that I’m running five minutes late.”

**Check your voicemail:** “Listen to voicemail.”

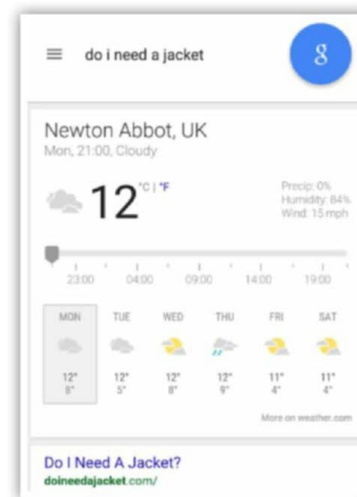


### Music & Movies

**Play music:** “Play Macklemore” or “Play Can’t Hold Us.”

**Identify a song:** “What’s this song?”

**Watch a movie from Google Play:** “Watch Frozen.”

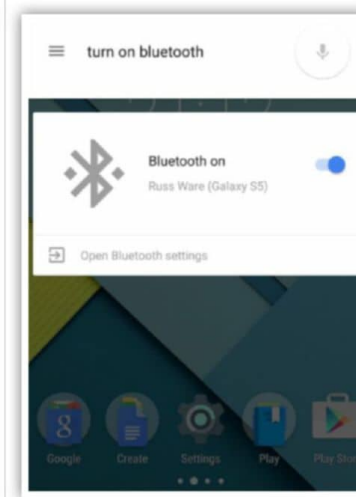


### Quick Answers

**Find the time:** “What time is it in Delhi?”

**Check the weather:** “Do I need a jacket today?” or “What’s the weather like tomorrow morning?”

**Solve a maths problem:** “What’s the square root of 2209?”

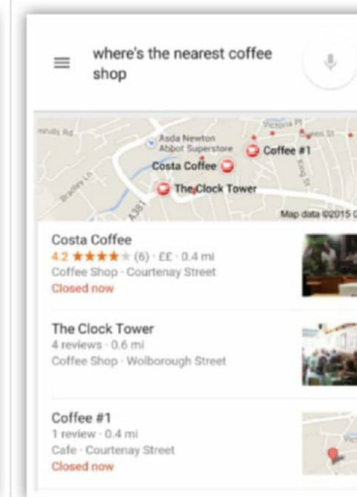


### Device Settings

**Wi-Fi:** “Turn on Wi-Fi” or “Turn off Wi-Fi.”

**Bluetooth:** “Turn on Bluetooth” or “Turn off Bluetooth.”

**Flashlight:** “Turn on my flashlight” or “Turn my flashlight off.”



### Get Directions

**Get directions:** “Navigate to Safeway” or “Directions to 1299 Colusa Avenue Berkeley California.”

**Find nearby places:** “Where’s the closest coffee shop?”

**Plan your trip:** “What are some attractions in New York City?”



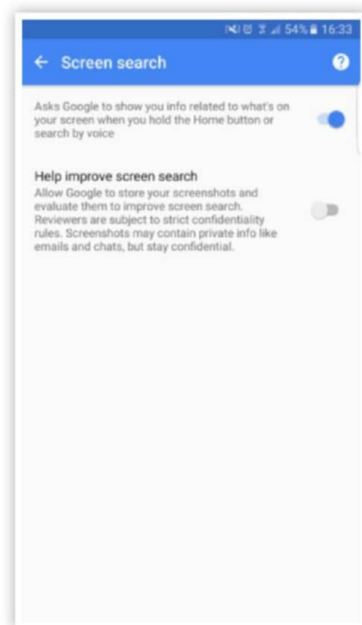


# Get More from Google Now on Tap

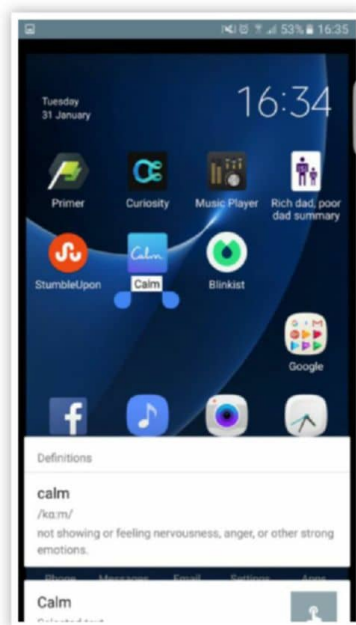
Google Now is about getting you just the right information, at just the right time. It can tell you today's weather before you start your day, how much traffic to expect before you leave for work and even the opening times of a restaurant you are talking about in Messenger. Google Now is always ready to work for you as you go through your day.

## Set Up Now on Tap

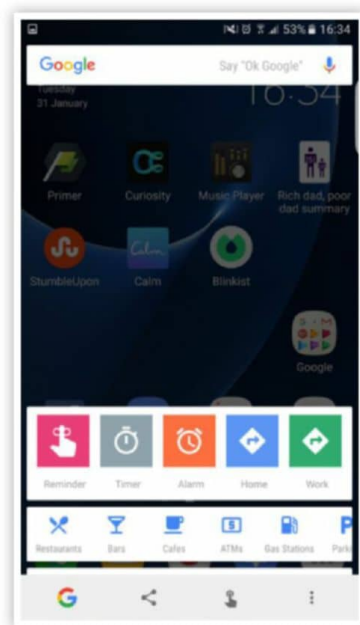
Now on Tap, also known as Screen Search, is one of those features that you don't know you were missing until you start to use it. Android works perfectly well without it, but even better with it.



**1** You can activate Screen Search on Android by pressing and holding the Home button. If, when you do this, the Google (search) app opens instead, you will need to turn Screen Search on. Open the settings in the Google app (the multicoloured G icon) and enable the feature here.



**2** What is shown when you press and hold the Home button with Screen Search enabled, varies depending on what you are doing at the time. If you are on the Home screen, you may see a series of quick launch shortcuts for things like Set Alarm, Show Directions for Home, Set a Reminder.

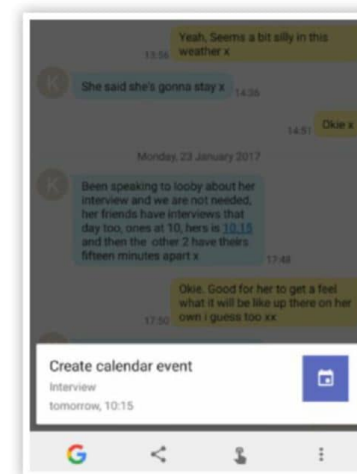


**3** There are always some set options available when you open Screen Search. Google Search on the left, Share next to that and then Select Screen and Settings. The select Screen button allows you to select text or an image on screen and then offers you different ways to search for that item.



## 6 Ways to Use Now on Tap

The more you try out Now on Tap, the more you realise just how useful and interactive it is. There is no substitute to discovering uses yourself but here are six to get you started.



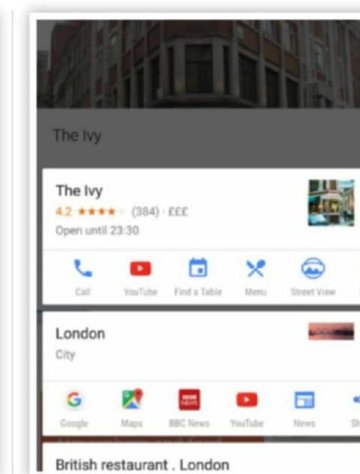
### Create Calendar Events

When chatting in almost any of the messenger apps for Android, you can use mentions of times or dates to create events in calendar. For example, if you sent the message "Let's meet at 2 tomorrow" and then activated Now on Tap, a calendar entry set for 2pm the following day will be created and be ready to confirm.



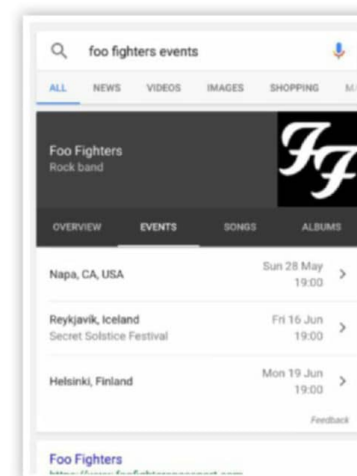
### Follow Up on News Stories

When you see stories in your news feeds and want to find some alternative sources or additional information, you don't just have to rely on the feed source. Now on Tap will recognise that the information on screen is news and offers up several different sources or related stories to view.



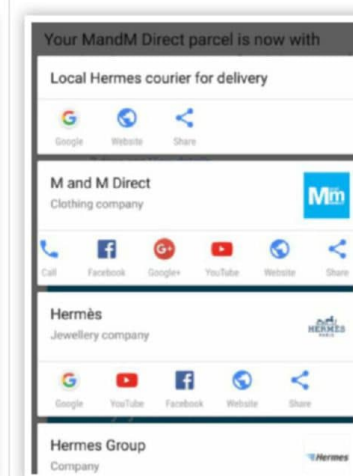
### Bookings and Reservations

You can use Now on Tap to make bookings and reservations for all sorts of things. If, for example, you are on the Facebook page of a restaurant, or if a friend mentions going to the cinema to see a certain film, activating Now on Tap should show you booking times, links and other info.



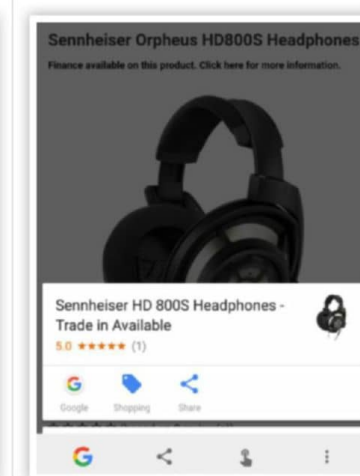
### Check Band Tour Dates

Bands are normally good at getting tour dates out on their websites or Facebook pages but keeping track if you follow lots of bands can be harder. If you are listening to a song from a favourite band and suddenly think "oh, that reminds me..." you can use Now on Tap > Events to find tour dates.



### Track Parcel Deliveries

Google Now will automatically track packages for you as it finds valid tracking numbers in your email inbox. You can also track packages if a valid tracking number is mentioned in a chat or if you are on a courier website. Just activate Now on Tap and tap 'Track [courier] Package'.



### Find Product Reviews

Any experienced online shopper knows to check customer reviews but also knows that reviews on certain sites aren't always to be trusted. Using Now on Tap, you can jump to a Google search or YouTube for more professional reviews of the product you are looking at in any online store.



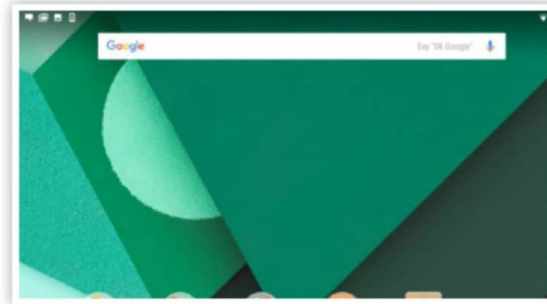


# Manage Notifications on Android

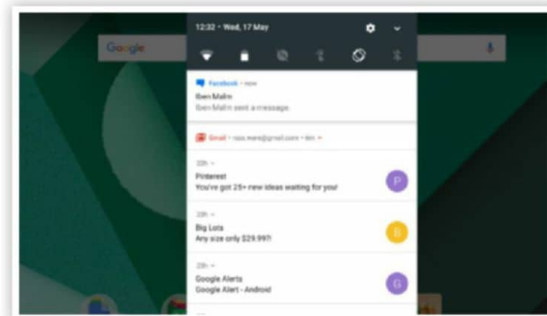
Notifications on Android do lots more than just telling you to check activity in a certain app. You can now do a lot more with your alerts and notifications from within the panel itself and even reply directly to messages from certain communications apps. Let's take a look at viewing and managing your notifications in Android.

## Viewing Notifications

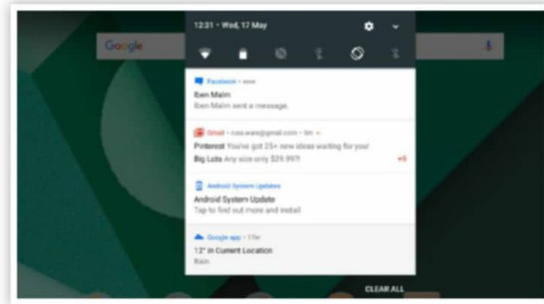
Whilst it may seem that how you view notifications on Android has barely changed for years, this important element of the OS has been subtly updated several times.



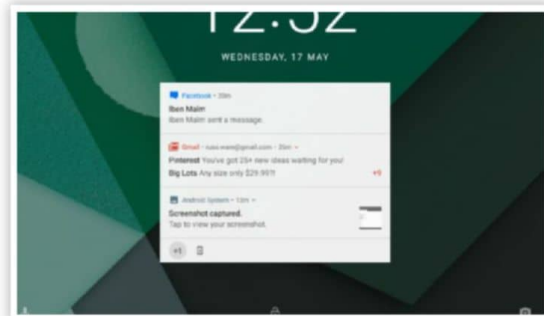
- 1 When notifications appear, if you are using your device at the time, they will be displayed in a bar at the top of the screen for a few seconds. Icons for different notifications, an "F" for Facebook, for example, will then be displayed in the status bar until they are viewed or cleared.



- 3 You can expand bundled notifications to see details. For example, if showing 10 new emails, you can see all of those emails in the notifications panel. To do this, place two fingers (or finger and thumb) on the notification and quickly move your fingers apart as if you are spreading the edges of the box.



- 2 To view notifications in more detail, drag your finger down over the status bar at the top of the screen. The notifications panel will then open, showing a list of everything from emails to Facebook updates to app alerts. Notifications are now (in Nougat) bundled together by the app they relate to.

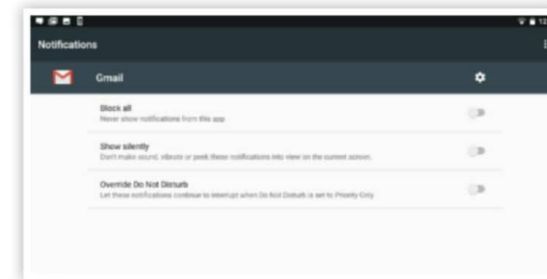


- 4 If you allow lock screen notifications on your device, you can view these in the same way as described in the previous steps. The only difference is that you don't need to open the notifications panel, as it will already be displayed on the lock screen when you wake your device.



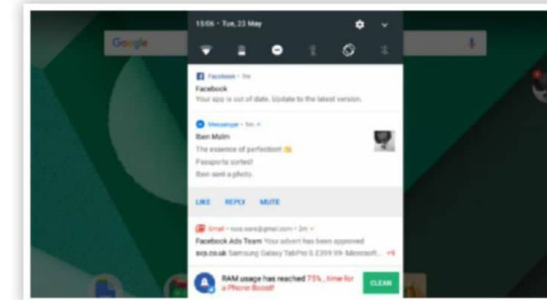
## Manage Your Notifications

You can do a lot more to control your notifications in Android nowadays, from silencing them to stopping them showing private information on the lock screen.



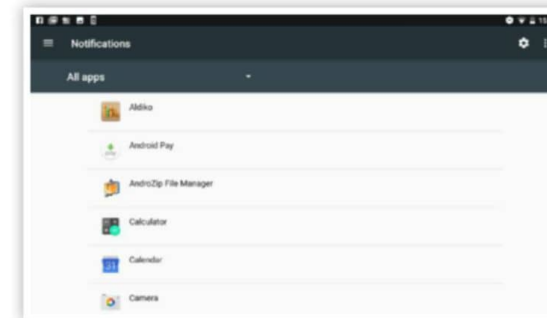
### Notification Settings

Notification controls let you manage individual notifications on the fly, from within the notifications panel. You can also go into the main Settings > Notifications and have access to further settings. Tap on an app to see notification controls or tap the settings icon (cog) and see further options.



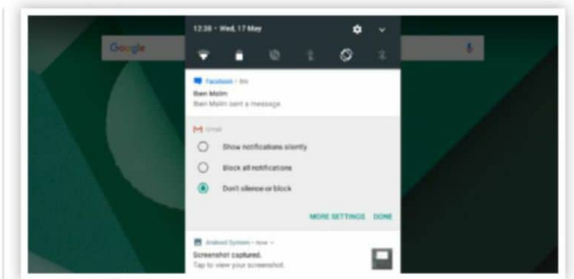
### Direct Reply Notifications

Nougat lets you reply to messages from apps like Facebook Messenger, Hangouts or Messenger directly from the notification shade, and means less switching between apps. This feature isn't limited to messaging apps. For example, in Twitter it could add the ability to reply to mentions.



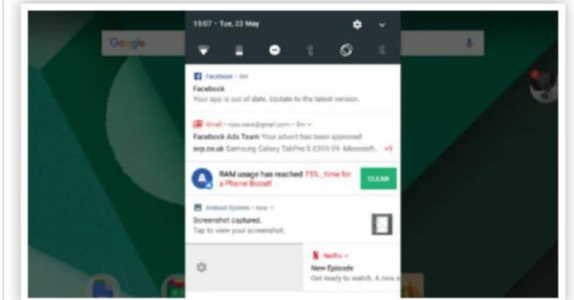
### Lock Screen Notifications

When you set up a lock screen on your Android device (and if you don't have a lock screen, why not?), the last part of the set up process will ask if you want to hide or show notification details on the lock screen. You can also set this option in Settings > Notifications > Settings > On the lock screen.



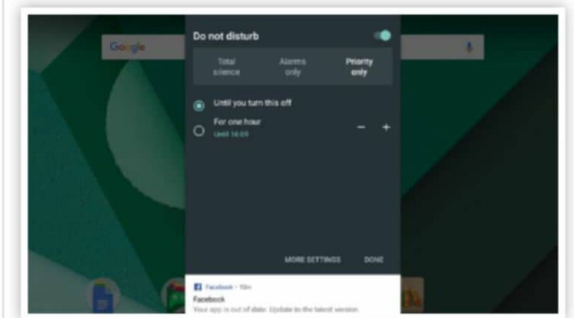
### Silence Notifications

You can control notifications from within the notifications panel. Slide a notification slightly to the left or right to reveal a settings icon. Tap this and you will see controls for 'Showing notifications silently', 'Blocking all notifications' (from that app) and 'Don't silence or block'.



### Clearing Notifications

Notifications will be cleared from the notifications panel when you tap through to the app they are from; or you can swipe them left or right to clear them one at a time from the list. You can also clear all active notifications by scrolling to the bottom of the notifications panel and tapping Clear all.



### Do Not Disturb

If you use the Do Not Disturb feature of Android, you will know that it will silence or stop notifications from apps when it is activated. However, you can now set individual apps to override the Do Not Disturb settings so that you still get notifications from that app.



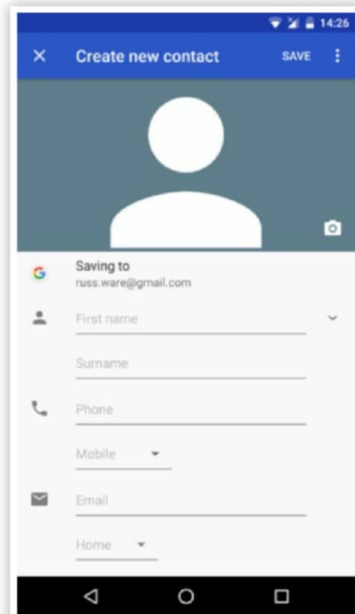


# Manage Your Contacts

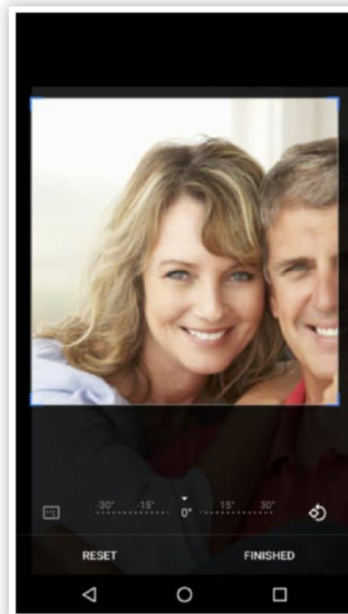
The Contacts on your Android device are stored in a stand-alone app, but one that will be integrated with the dialler app. This gives you two ways to access and edit your contacts list, even though changes in the dialler will be mirrored in the main contacts app. For this guide we will look at the stand-alone app, which should be fairly standard on all Android devices.

## Creating a New Contact

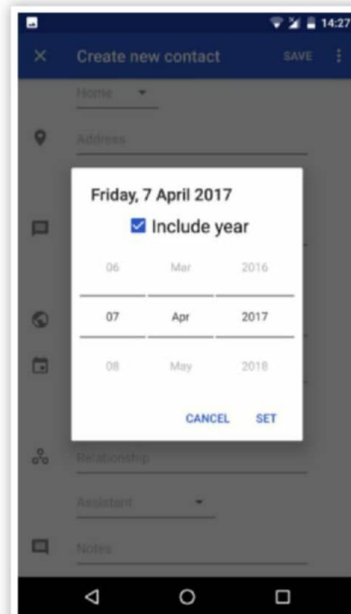
There are several ways to add a new contact to your contacts list, from manually creating a new listing, to adding a number from your Call Log.



- 1 If you are creating a contact from scratch, for example when someone is reciting their number to you, you should open the Contacts app, tap the + button at the bottom for a new contact and then enter the details you have: name, numbers, email address, etc. Tap Save when you are finished.



- 2 If you want to, you can add a photo to the contact as you create it. Tap the camera icon and choose whether to take a new photo or add one from your image gallery. The photo doesn't have to be of the actual person but remember that this is the image that will pop up on screen when that person calls.

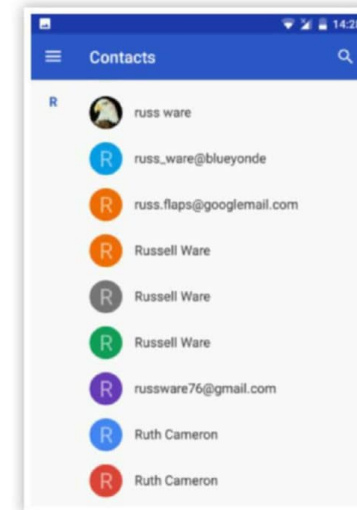


- 3 If you scroll down to the bottom of the information fields in the create contact screen, you will see the option to 'See more fields'. Depending on the device you have, you will now have the opportunity to add anything from date of birth and website, to their relationship to you.

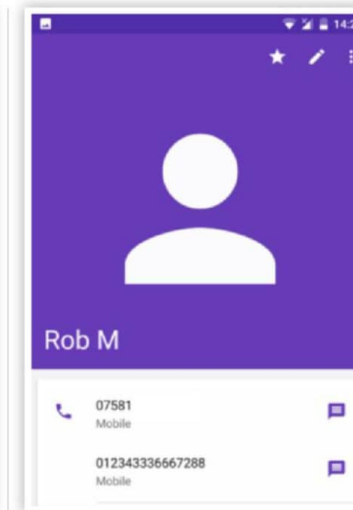


## Edit or Delete Contacts

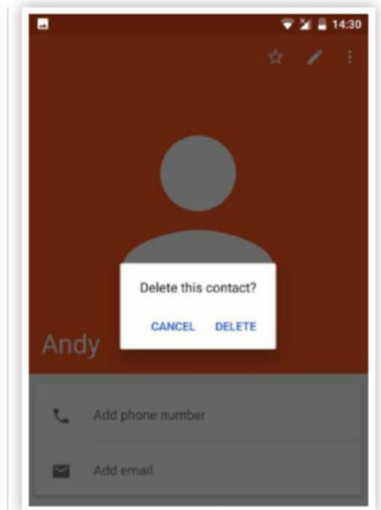
You don't need to add every detail to a contact when you first create it. If you are given more contact details later (email address perhaps), you can edit contacts at any time.



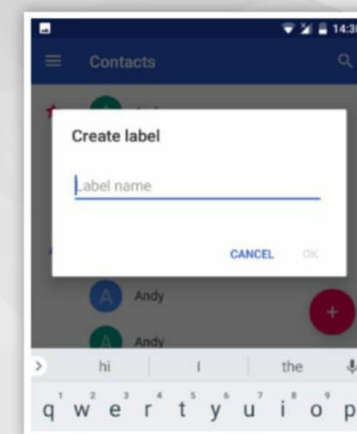
- 1 Open the Contacts app and scroll to the contact you want to edit in the list that is displayed. Tap on the contact name and then tap the pencil icon; or tap Menu > Edit. You can now access all of the same details as when you first created the contact listing. Tap Save to finish editing.



- 2 You can also make a contact a Favourite. This means they will be displayed on the first screen of the phone dialler app and also displayed at the top of the Contacts with a star next to their name. To favourite a contact, open their details page in Contacts and then tap the star icon at the top.

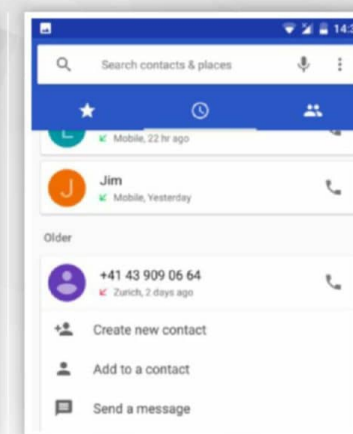


- 3 Contacts lists can get bloated with old or unwanted contacts over time, especially as you add new accounts to your device. If you want to delete a contact, simply open the contact details page and tap the menu button. From the dropdown menu, tap Delete and then confirm the action.



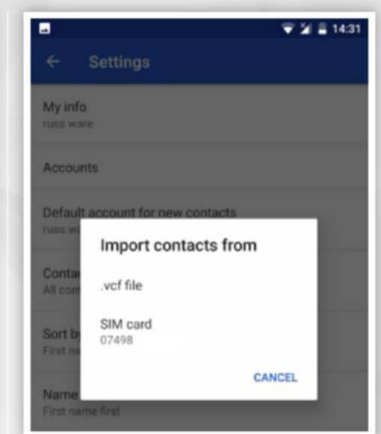
### Contacts Labels

- You can group your contacts together by assigning them labels. This makes them easier to keep track of and allows you to do things like send group messages more easily. Open the Contacts app and tap the contact you want to assign. Tap Edit and scroll down to the bottom of the fields to find the Label option.



### Quick Contact

- If you receive a call from a new number and want to add it to your contacts list, you can do so from the dialler call log, rather than having to copy information across into the Contacts app. Open the dialler (phone icon on the Home screen), select the number and tap Create New Contact.



### Importing Contacts

- You can import contacts from a SIM card that has been moved into a new phone or a sent .vcf file (contacts file). Open Contacts > Menu > Settings and choose Import from the list. Choose which method you want to use to import (SIM or .vcf) and follow the instructions on screen.





# Personalising the Home Screen

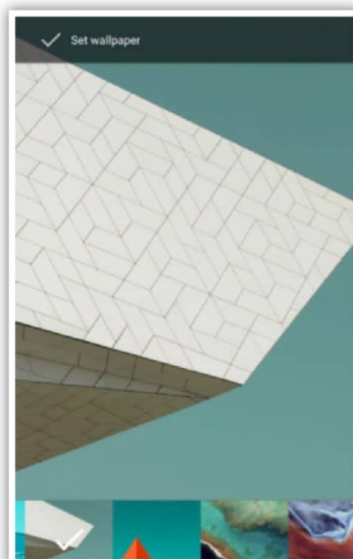
Changing the home screen, whether that means a new wallpaper, moving icons into folders or choosing widgets, is one of the first things most new Android users want to do. The home screen is an extremely flexible area and should be used to make your device more usable and personal. As you add more apps and activate different device features, the number of different ways you can customise the home screen increases.

## Changing the wallpaper

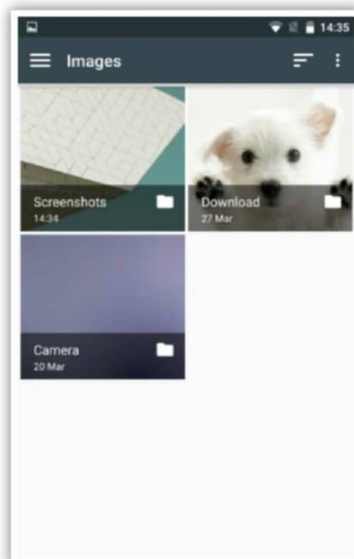
The exact steps for changing the wallpaper may vary between devices. This is the method for the Nexus 6 and Lollipop.



**1** Tap and hold in any blank area on the home screen until it shrinks and options appear. Exact options will vary, but you will usually see Wallpapers, Widgets and Settings. Tap the Wallpapers option and the wallpaper selection screen will open.



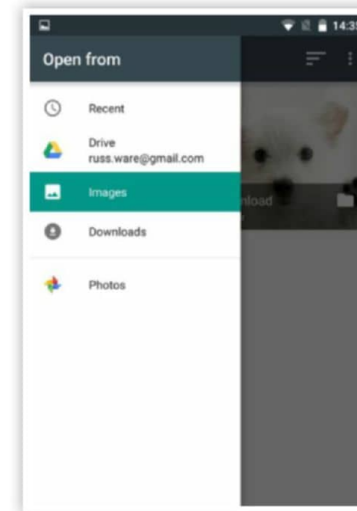
**2** Scroll the wallpaper thumbnails at the bottom to see all system wallpapers available on your device. If you like the look of one of the system wallpapers, tap on the thumbnail and then tap Set Wallpaper at the top of the screen. The chooser will close and the wallpaper is applied.



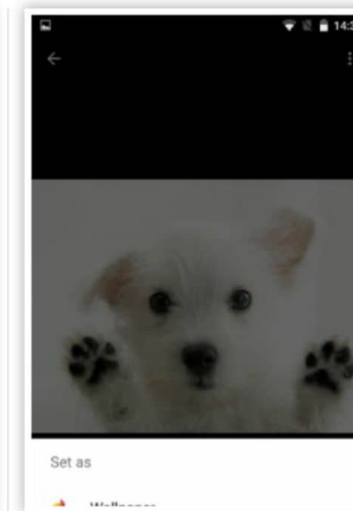
**3** The wallpaper chooser also gives you the option to use an image from elsewhere on your device. Tap Pick Image and a selection of recent images will appear. These can be taken from the Photos app, Google Drive, downloads and other locations, depending on what apps you have installed.

## What is the Home Screen?

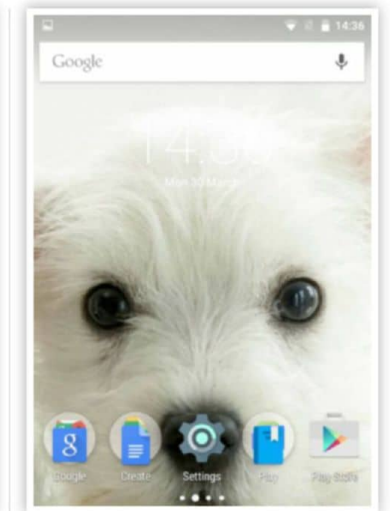
► This simply means the main screen of your device, the screen you arrive at when you first turn on your Android device.



**4** If none of the recent images shown appeal to you, tap the Menu button and choose the location you want to browse. Just as with system wallpapers, when you see an image you want to use, tap the thumbnail and then tap Set Wallpaper to complete the process.



**5** An alternative way to set an image as a home screen wallpaper is to open the application where the image is located (Photos for example), view the image and tap the Menu button. From the menu, select Set As and choose Wallpaper.



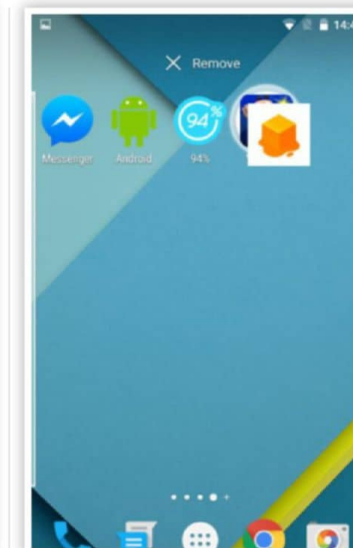
**6** The image you choose will be shown as the background image on both the lock screen and the home screen. On some devices, when setting the image as a wallpaper, you will be given the choice to save as home screen, lock screen or both.

## Creating Home Screen Folders

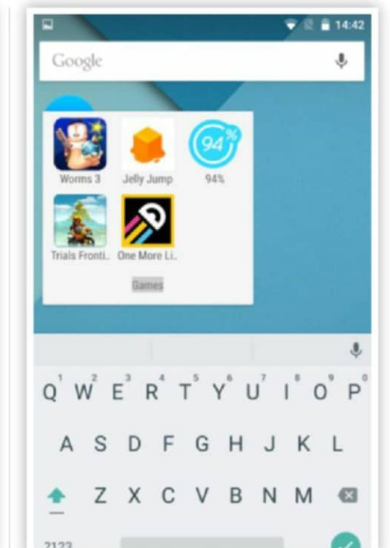
If your home screen is becoming too full of app icons and other elements, you can create folders to organise things.



**1** Some devices already have folders set up on the home screen, but if you want to add more, the process is very simple. In older versions of Android you could choose to create an empty folder first and then move items into it as you wished. In later versions, folders are automatically created.



**2** Folders are automatically created when you pick up one app icon and hold it over another. Tap and hold on an app icon to pick it up, drag it over to another icon you want in the same folder and when the circle appears, lift your finger off the screen to drop the icon into the folder.



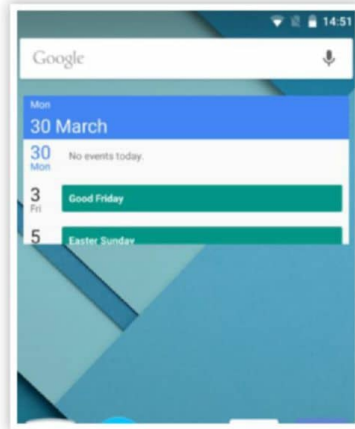
**3** Once you have created a new folder, you can rename it to whatever you wish. Open the folder and tap on the existing name or where it says "Unnamed Folder". Type your new folder name and then tap the Ok button. Folders automatically delete when all contents are removed.





## Home Screen Widgets

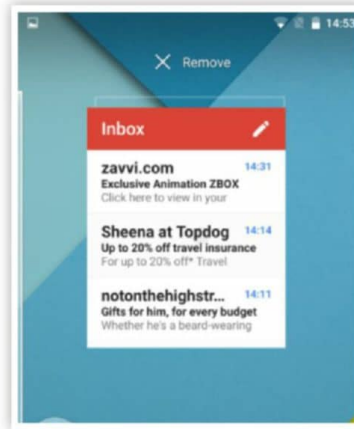
Widgets are an important (and useful) part of the Android OS, allowing you to access app info from the home screen.



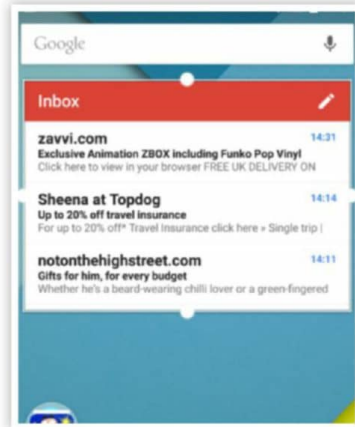
**1** ▶ Your device may already have a few widgets placed on the home screen when you first set it up. These can be removed or moved to suit your needs (see more on removing widgets further down the page). To begin adding new widgets, tap and hold on any blank area of the home screen.



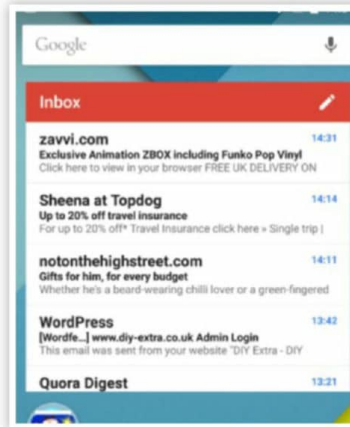
**2** ▶ From the Menu, tap the Widgets option. You will now see a grid containing all available widgets currently installed. If there are different widgets available for the same app (different sizes for example), you can see them both by tapping on the image in the grid.



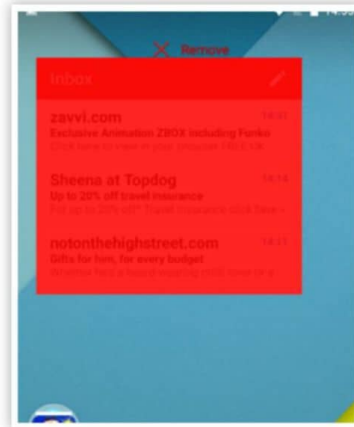
**3** ▶ To add your chosen widget to the home screen, tap and hold on the image in the grid until the view shifts back to the home screen. Keeping your finger on the screen, you can drag the widget into position, even dragging it on to a new home screen panel. Lift your finger to place the widget.



**4** ▶ Some widgets can be made bigger or smaller to better fit your available home screen space. To resize a widget, tap and hold on it for a couple of seconds and then let go. If the widget can be resized, tabs will appear around the edges. Drag these tabs to shrink or expand it.



**5** ▶ When made larger, some widgets will expand to display more information automatically. Some widgets will stay the same size but their active area (the area which opens the app when tapped) expands to cover more of the home screen panel. Tap away from the widget to stop editing.



**6** ▶ Removing widgets is easy, and can be repeated as many times as needed. Removing a widget from the home screen doesn't mean it has been removed from the device; it will be in the widget menu if needed. Tap and hold a widget, and then drag it to the Remove icon to delete it.

### What are Widgets?

▶ A widget is a home screen component in Android, which allows you to view or access information from other apps.



## Display Settings

Aside from changing the wallpaper, widgets and app icons, there are several other display settings for the home screen.



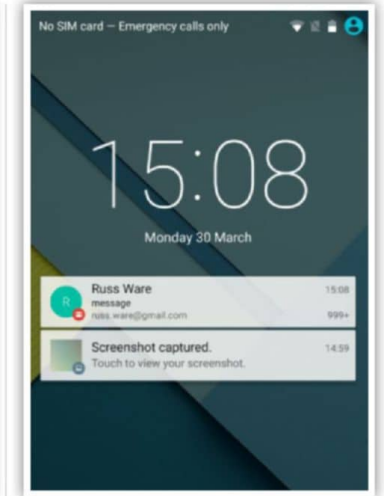
### Brightness Level

▶ You can change the display brightness to suit your needs using the slider in the Quick Settings panel, or by opening the main Display Settings. You can also select Adaptive Brightness, which will automatically adjust the display brightness based on ambient light.



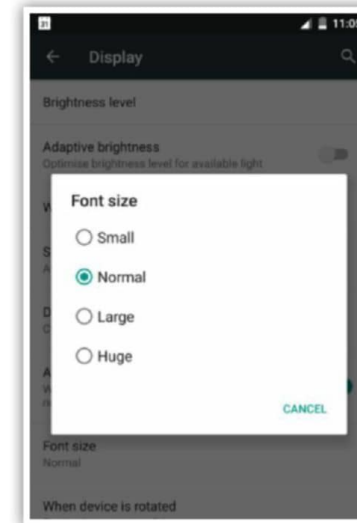
### Daydream Mode

▶ Daydream is what Android calls the screensaver. Once Daydream is enabled, you can choose from several options. You can choose to display a large clock, a pattern of colours, a selection of your favourite photos or news and weather updates.



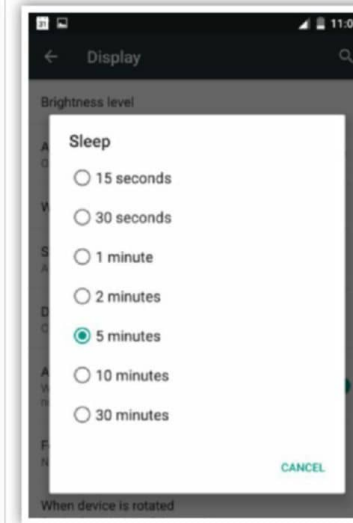
### Ambient Display

▶ Ambient Display is simply a new way to show you notifications. It's interactive, meaning the notifications do something when you press or tap on them. Ambient Display uses the same notification rules as the status bar.



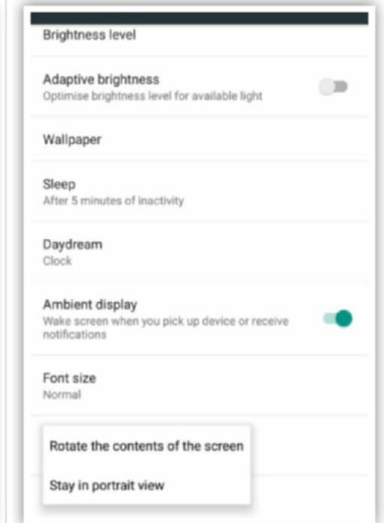
### Font Size

▶ You can change the size of the system font in the display settings, choosing from Small, Normal (default), Large and Huge. You can also increase the font size on an ad hoc basis using settings in the Accessibility section.



### Sleep After

▶ If you are constantly picking your phone up and putting it down, turning the screen on and off, it is a good idea to reduce the sleep timer. This means you don't have to worry about putting the screen into sleep mode every time as it will do so automatically after a selected period (15, 30, 60 seconds, etc.).



### Screen Rotation

▶ This controls whether the whole screen rotates to fit when you hold the device in portrait or landscape position. In some cases, you may not want the screen to flip when you hold the device on its side. If this is the case, set this option to "Stay in portrait view".



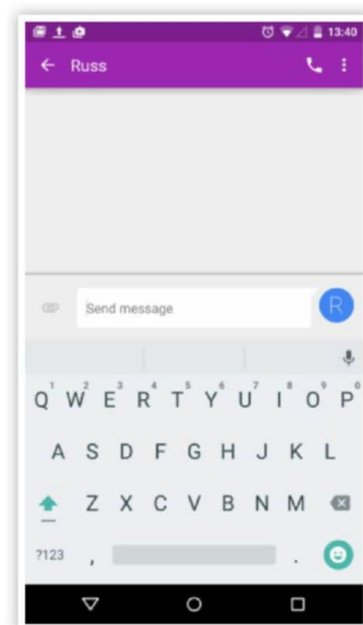


# Android Keyboard Tips

If you are not used to typing on your new phone or tablet, it can seem difficult at first. The keyboard found on most Android devices has been evolving and improving ever since the first touch screen phones appeared, as have the numerous added typing settings. A simple task like typing a quick email is easy enough, however, explore the keyboard's many tricks and you will see that even this can be improved.

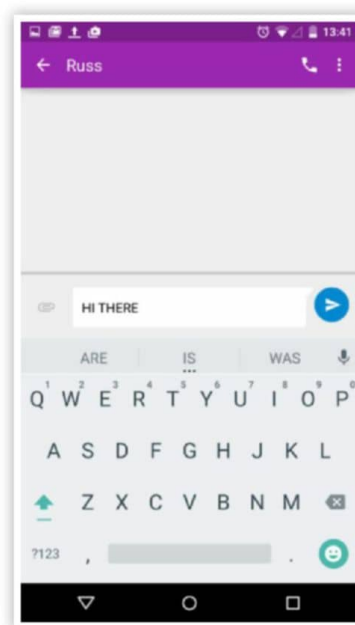
## Default Keyboard

These tips are based on using the standard keyboard found on devices running Lollipop. Custom keyboard settings will certainly vary from those shown here.



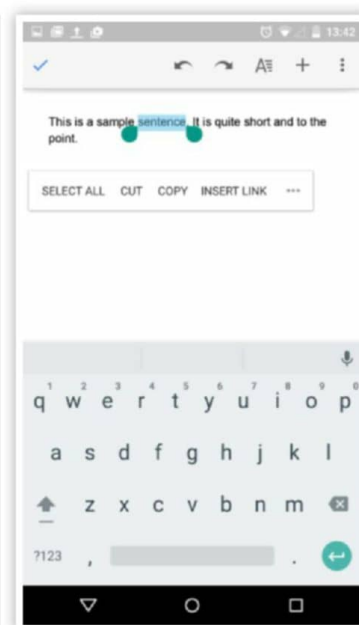
### Tip 1 – Hide or Reveal

► Many apps, especially communication apps where typing is assumed to be the reason you are using them, will automatically open the keyboard when first opened. In others, you will need to tap in the text box to make the keyboard appear. To hide the keyboard in any app, tap the Back button once.



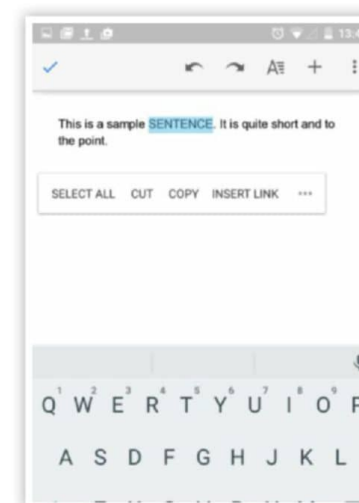
### Tip 2 – Toggle Caps Lock

► To type a capital letter in any app, tap the Shift key once. The next letter you type will be upper case, after which it will automatically switch back to lower case as you continue typing. If you need to type all in upper case, either tap and hold, or double-tap the Shift key.



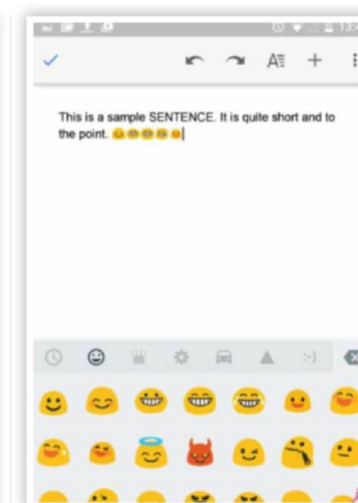
### Tip 3 – Selecting Text

► To select a single word or section of text you have typed, touch and hold or double-tap within the text. The nearest word highlights, with a tab at each end of the selection. You can then drag the tab to increase the text selected. To place the cursor within a word, simply tap where you want it to appear.



### Tip 4 – Change Capitalisation

► If you wish to quickly change the capitalisation of a word you have already typed, you can simply select it (see Selecting Text) and tap the Shift key. Tapping once will capitalise the first letter of the word only, while double-tapping Shift will make the whole selection upper case.



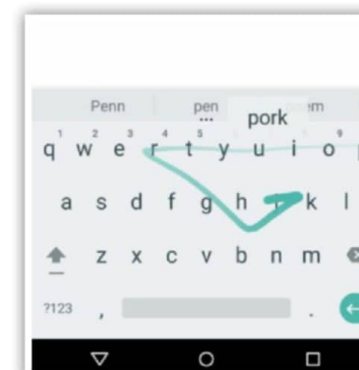
### Tip 5 – Using Emoji

► Emoji are small, colourful images used to express emotions or to add fun to your messages. Depending on your device, you may need to touch and hold the Return key and then slide your finger to the happy face to display emoji. On a tablet, just touch the emoji symbol at the lower-right. To move between categories, swipe left or right or touch the symbols in the top row. To select an emoji, tap it and it will appear in the message.



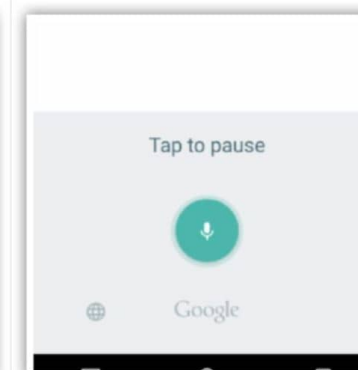
### Tip 6 – Next Word Suggestions

► As you type on the Android keyboard, you will notice that words will appear above it. This is Android guessing which word you are typing, along with alternative words. To speed up your typing, you can simply tap the correct word as it appears to insert it into the message, email or other text. The middle word suggestion may have three dots below it. This means that you can tap and hold on the word to open a larger list of possible suggestions.



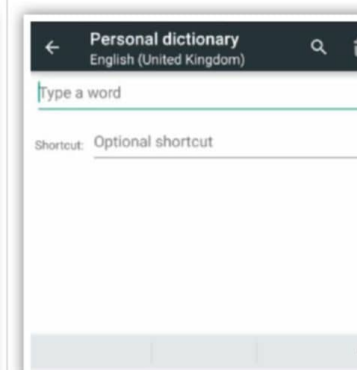
### Tip 7 – Gesture Typing

► To input a word using Gesture Typing, first tap the location in the text box where you want to type. Slide your finger slowly across the letters of the word you want to input. Release your finger when the word you need is displayed in the floating preview or the middle of the suggestion strip. To select one of the other words in the suggestion strip, touch it. If the word you want isn't shown while using Gesture Typing, you can type it out manually. If you gesture a word and want to change it, touch the word to see other choices in the suggestion strip.



### Tip 8 – Voice Typing

► The microphone button you can see on the Android keyboard allows you to input text by speaking. This applies in most places where you can enter text with the on-screen keyboard. To type with your voice, tap the Microphone key, and when you see the microphone image, say what you want to type. In some languages, you can also enter punctuation by speaking it, for example "comma," "period," "question mark," "exclamation mark," or "exclamation point."



### Tip 9 – Your Personal Dictionary

► You can add your own words to your personal dictionary so that your device remembers them. To add a word or phrase, including an optional shortcut, go to Settings > Personal > Language & Input > Google Keyboard > Text Correction > Personal Dictionary and select the language of the dictionary you want to modify, then choose Add and type in the word. When you use the optional shortcut as you are typing, your word or phrase appears as an option in the suggested words strip above the keyboard.





# How to Find & Install Apps and Games

All of the apps and games you could possibly want are available for download from the Google Play store; from WhatsApp and Viber to Pokemon Go and Clash of Clans. The Play Store is accessed through the Store app, usually found on the home screen of new devices. If you can't see the app on the home screen you will find it in the main app drawer. If you want to get the most from your Android device, the Play store is definitely the key.

## Using the Play Store

Getting used to navigating the Play store is one of the first things you should do if you are new to Android.

### 1 Google Play Menu

▶ The default screen when you open the Play Store is the Apps & Games screen. To view the main screens for Movies, Music, Books etc. tap the menu button here. You can also access account settings here.

### 2 Search Field

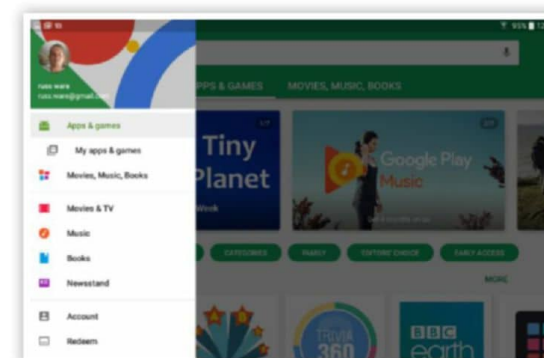
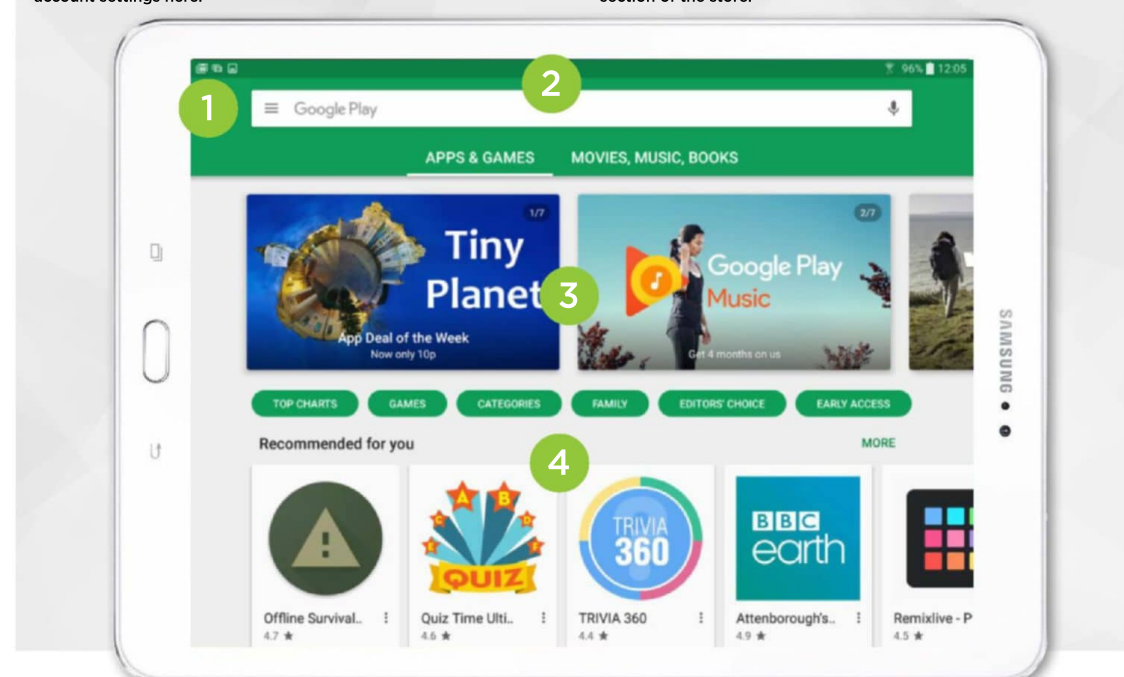
▶ The search field is always visible when browsing any category in Google Play. Search in Apps & Games and the results will be apps. If you search in Books the results will only include books.

### 3 Charts and Categories

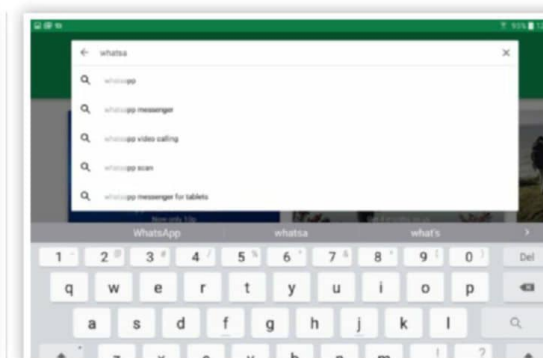
▶ These buttons will take you either to app charts, free, bestselling etc. or let you view the different categories within this section of the Play Store. Similar buttons appear in each section of the store.

### 4 App Gallery

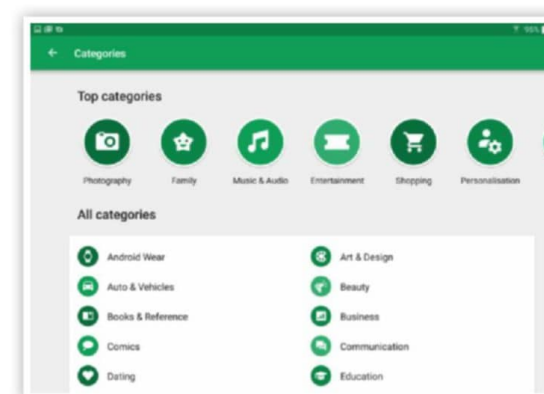
▶ You can scroll down the main screen of the Play Store to see various app galleries. These range from New & Updated to apps which are specifically recommended for you.



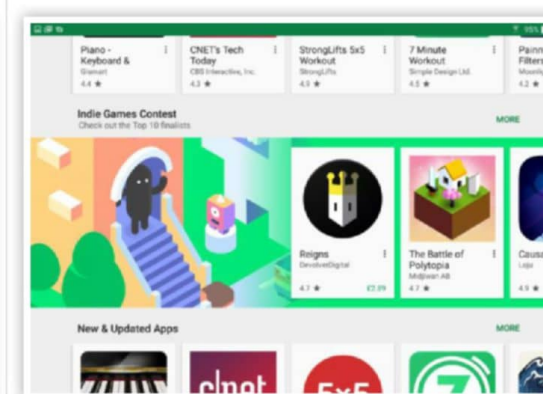
1 ▶ Tap the Play store icon on the home screen or the main app drawer and the app will open on the Play store main screen. Tap the menu button in the top left of the screen to see links to other sections of the Play Store: Books, Music, Movies, etc.



2 ▶ The search bar at the top of the screen allows you to search for apps and other content by name if you know what you are looking for. Searching while in any of the main Store sections will return results only for that section; searching in Books for example just shows books in the results.



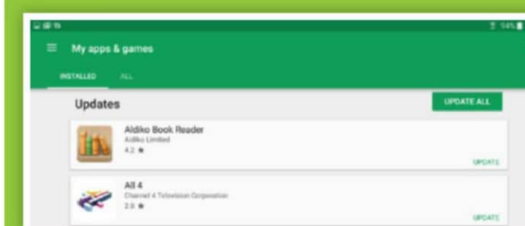
3 ▶ If you want to browse all available apps instead of searching, tap the Categories button. Choose the category you want to browse from the list or choose one of the "Top Categories" recommendations from the circles at the top of the screen.



4 ▶ Scroll down the main page of the app store and you will see recommendations, offers and other content available. This will change as you begin to install apps, reflecting your previous choices and offering more personal recommendations.

## Play Store Menu

Tap the menu button at the top of the Play store to open the app menu and access the Store Settings.



### My Apps & Games

▶ My Apps & Games allows you to see not only the apps that are currently installed on your device but also all apps that have been installed using the current Google account. This is also where you come to see if apps need updating and to action the updates when needed.



### My Account

▶ This screen lets you review all of your purchases from the Play store, as well as showing you your Google Play balance and current payment method. Tap any of the items in the order history list and then tap View to see more information about the app, music, movie, book or magazine.



## Installing Apps and Games

Installing the apps and games you have selected is fairly easy and only really varies depending on if the app is free or needs to be paid for. The app or game information screen contains a lot of useful information and it is worth checking each page out fully before you download anything. Let's take a look at that screen and the process of installing apps from the Play Store.

### App Info Screen

There is a lot of information to be found here, from the number of downloads and screenshots, to user reviews and permissions.

#### 1 App Title and Rating

The full name of the app is shown here, along with the developer's name and the PEGI suitability rating. The small blue stylised icon beside the developer name shows editor's recommendations.

#### 2 Install/Purchase Button

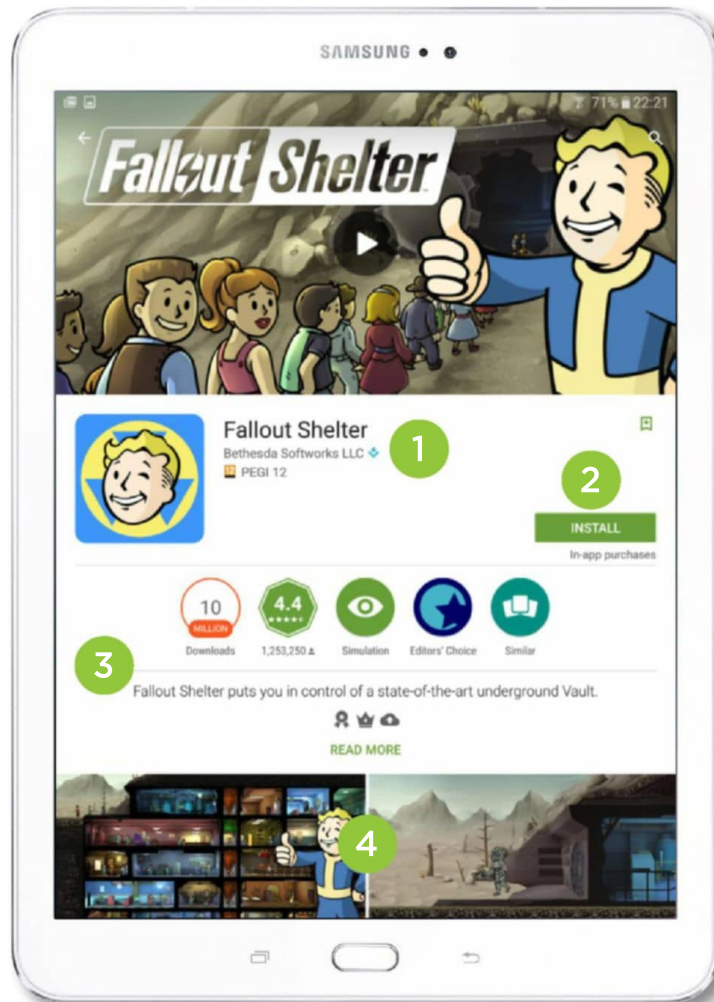
Tap the Install button to begin the installation process. You will have chance to confirm or cancel the installation. If the app is a premium app, this button will show the price and tapping it will open the payment window.

#### 3 App Information

The four icons, from left to right, show number of downloads, user reviews, the app category and similar apps. Aside from the downloads icon, they can be tapped to see more info. Below this is the developer's description.

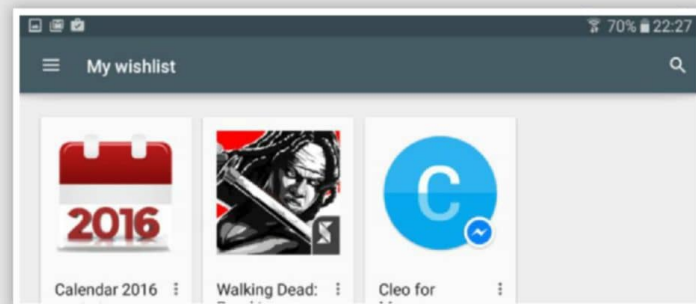
#### 4 App Screenshots

Here you can view images of the app, letting you further explore what the app does before installing. You will also sometimes find videos of the app here. Below the screenshots is a rating system.

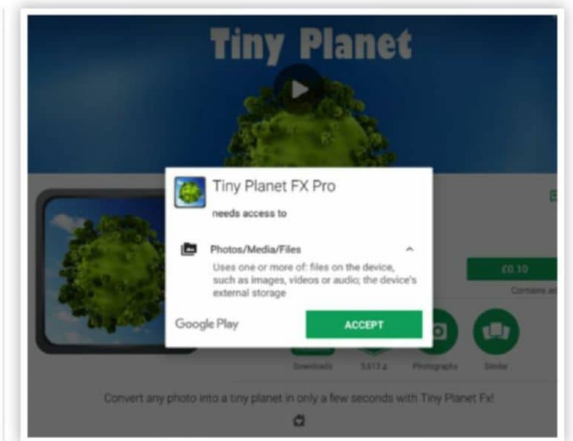


### Create a Wishlist

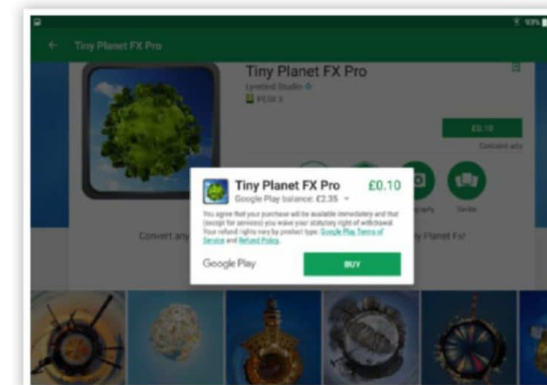
The Google Play Store allows you to add apps and games, along with other content, to a Wishlist. You can add items to the list, on a mobile device or PC, by tapping the small + icon to the right of the app title. You will then be notified if an item on your Wishlist changes.



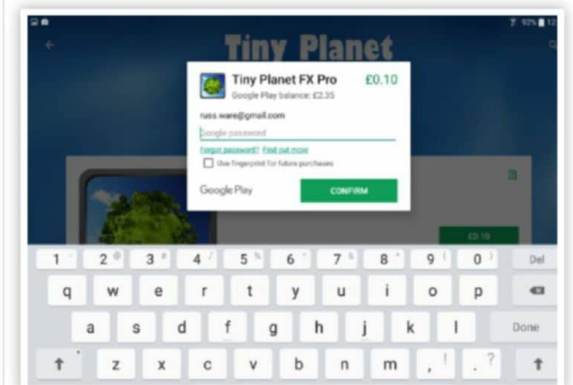
1 When you find an app you want to know more about, tap the thumbnail to open the info screen. Everything you need to know about the app can be found here, from download statistics and screenshots, to user ratings, reviews and similar app suggestions.



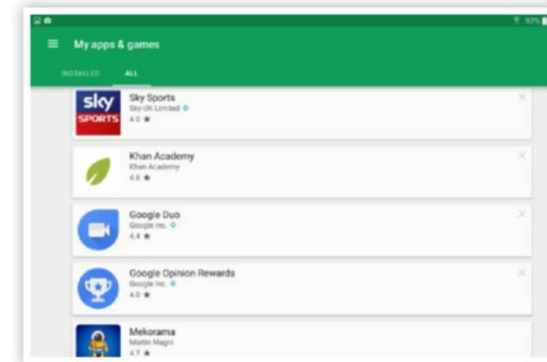
2 Free apps will have an Install button and paid apps will have a button displaying the price in your regional currency. After tapping the Install button you will be shown the Permissions the app requires. These will vary from app to app. Tap Accept.



3 The app will now download and automatically install on your device. The button on the app info screen will then change to Open, allowing you to try the app straight away. An Uninstall or Refund (if a paid app) button is also added to the screen.



4 If the app is a paid or premium app, after the permissions screen you will need to enter your Google account password to authenticate the purchase. If you don't have a payment service set up, you will be asked to add one before you can continue.



5 You can easily see which apps you have installed from within the Google Play Store. Tap the menu button and then choose "My Apps & Games". This will not only show you the apps you have installed but all apps you have downloaded.



6 We all make mistakes and if you download a paid app and decide that you have made a mistake, getting a refund is easy; as long as you act within 2 hours of purchase. Just go to the app screen in Google Play and tap the "Refund" button.



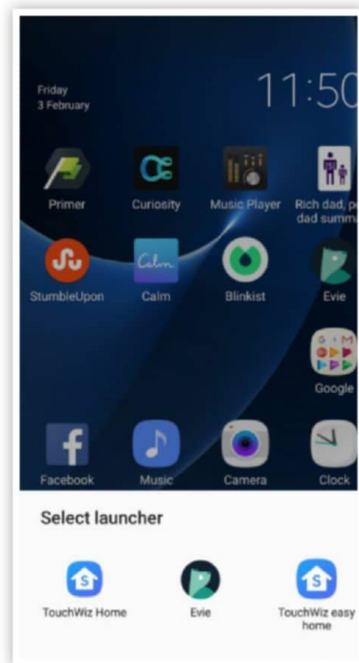


# Manage Your Apps and Games

As you add more and more apps to your Android phone or tablet, it will become more important to be able to manage them properly, and to keep them running smoothly and securely. The tips and tricks in this section will introduce you, amongst other things, to the Application Management screen of your Android device, as well as showing you how to disable preinstalled apps and get problem apps working after a fault.

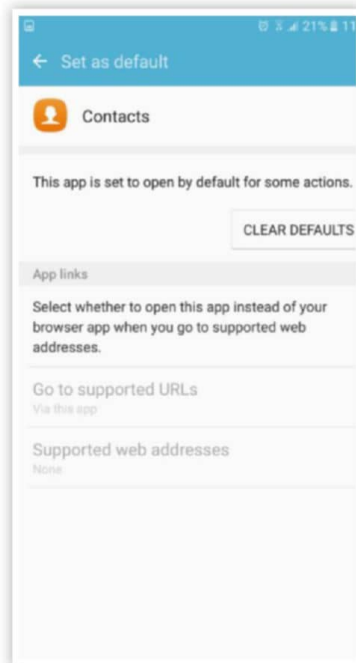
## Android App Management

The app management options have changed slightly over time, so some older devices, or those running older versions of Android, may have fewer options than shown here.



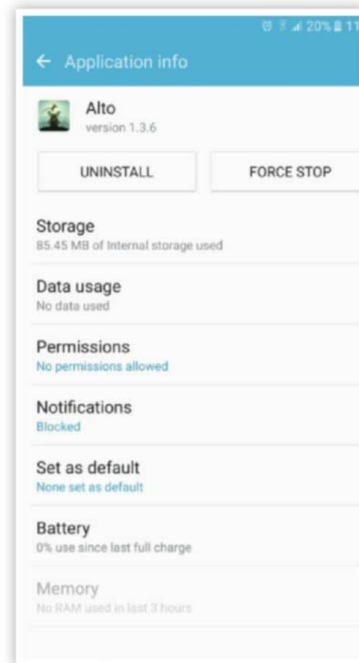
### Set App Defaults

► There are many apps available on Google Play that provide the same or similar functions to your phone or tablet's built-in tools. When you install one of these apps and then use a particular function it provides, Android will give you the option to make it the default app for that function.



### Reset App Defaults

► If for any reason you decide that the default app you have chosen is not the one you want to use all the time, you can easily remove its default status. Go to Settings > Applications > Default Applications. Choose the function you want to alter and choose the app to assign to it.



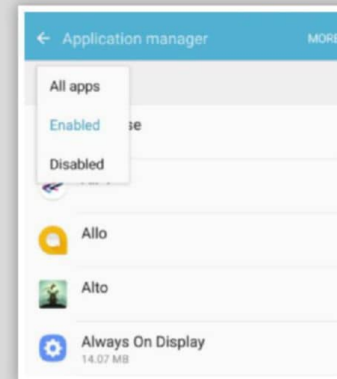
### Removing Apps

► Most apps take up just a few MB of space but if you wish to remove an app, the process is simple. Head to Settings > Applications > Application Manager. Select the app you wish to remove and then tap Uninstall. You can also remove apps by dragging them to the trash in the app drawer.

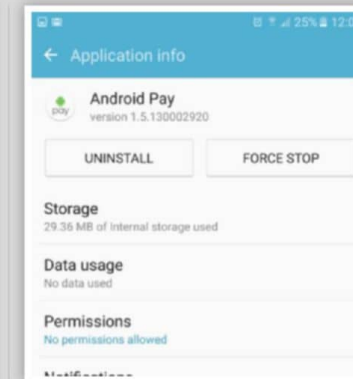


## Fix Problem Apps

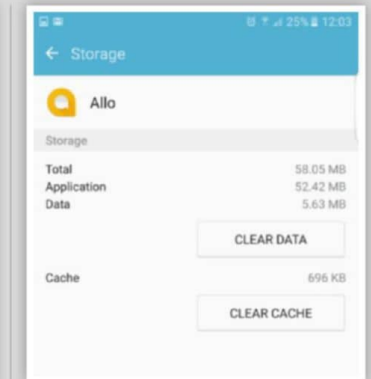
From time to time you might find that an app is not behaving as it should. You might see an error message pop up on screen or you might not. Sometimes an app just won't seem to open.



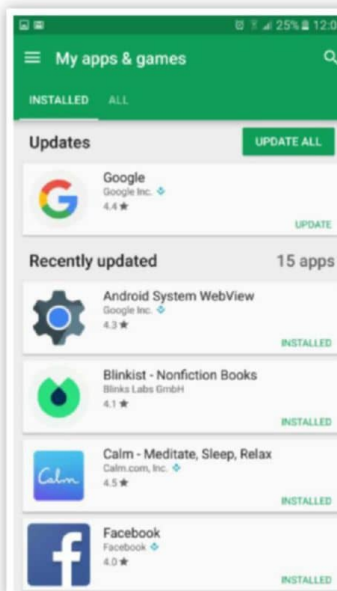
**1** ► Go to Settings > Applications > Application Manager and select the Enabled Apps tab at the top of the screen. Find the problem app in the list and tap on it to see the Application Info screen. You will then see several different things to try to get the app working.



**2** ► You can try the Force Stop. This sounds worse than it actually is. It simply forces the app to stop running. You can then try running the app again to see if it works properly. You can also try Clear Cache before you retry the app. This removes files and data that the app has stored.

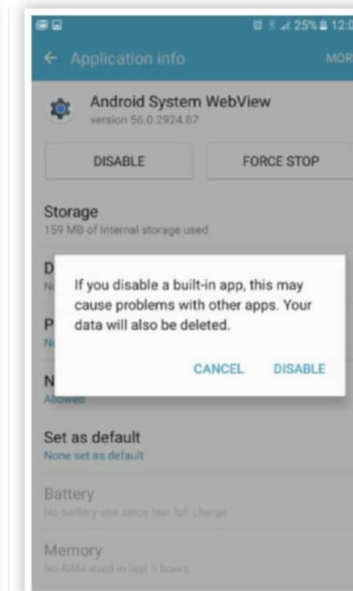


**3** ► Your third option is Clear Data. This is more drastic (for the app) than clearing the cache and will remove stored password and settings. The fourth button on the App Info is self-explanatory. If nothing else has helped, Uninstall the app and then download it again.



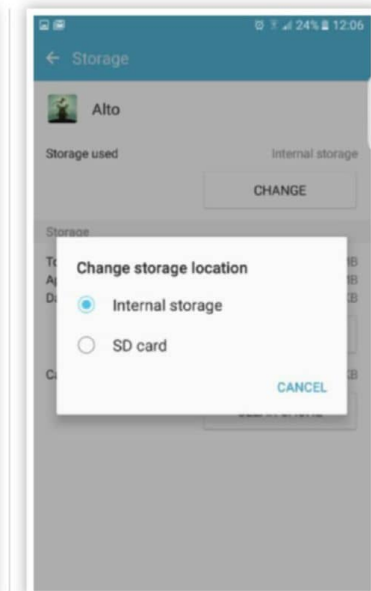
### Check for App Updates

► If you have tried clearing the cache and data, and the app is still not working properly, it is worth checking to see if there are any updates available for it. Open the Play Store and tap the Menu button. Select My Apps from the menu and check if the problem app has Update next to it.



### Disable Stock Apps

► Newer versions of Android (Jelly Bean onwards) give you the option to disable apps that came preinstalled on your device. Head into the Application Manager and select the app you want to disable. You will see that if there is not an Uninstall button, there is a Disable button instead.



### Move Apps to SD Card

► You can save space on your smart device by moving apps to your microSD card. Obviously, you will need an SD card inserted. Open the Application Manager, tap on the app you want to move, and then either tap Move to SD or tap Storage > Change > SD Card. System apps cannot be moved.

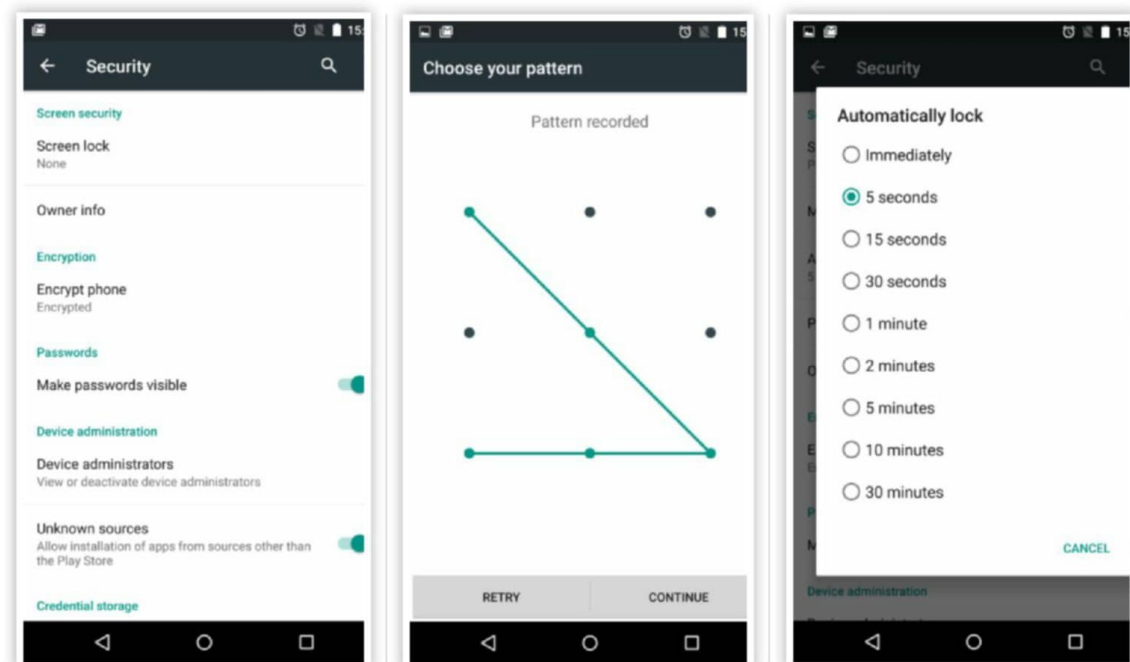


# Locking Your Android Device

Taking care of the security on your Android device is a very important step. Setting up a simple screen lock, whether that is a PIN, pattern or password, is one of the first things you should do to make your device more secure. Adding a lock screen not only stops prying eyes, but several of the more advanced security features require a screen lock to be set up before they can be activated.

## PIN, Pattern or Password Locks

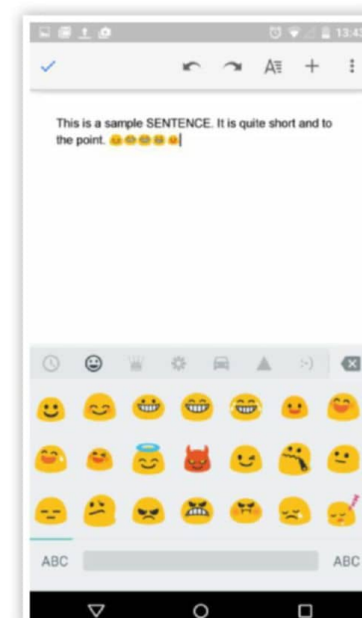
Choosing between PIN, Pattern and Password lock is down to personal preference, and also your security concerns regarding the level at which you want to protect your data.



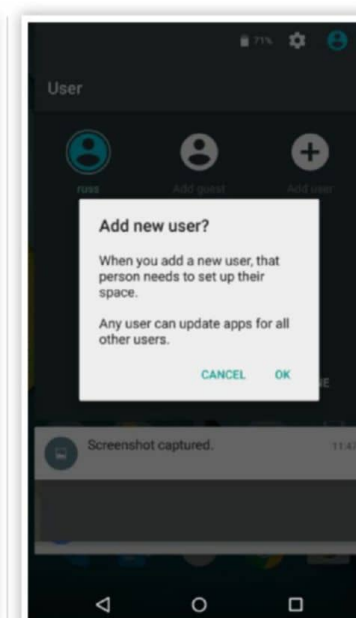
**1** ▶ Open the main Settings and scroll down to the Security section. Screen Security is the first section, with Screen Lock the first option. Within the Screen Lock settings you will see five options: None, Swipe, Pattern, PIN, and Password. Swipe and None can be ignored for now.

**2** ▶ To set up a pattern lock, tap Pattern and choose whether you want to add an extra sign in on start-up. Tap Continue and draw your pattern out on the dots. The lines of your pattern can cross over each other, allowing you to make the pattern lock quite complicated and hard to guess.

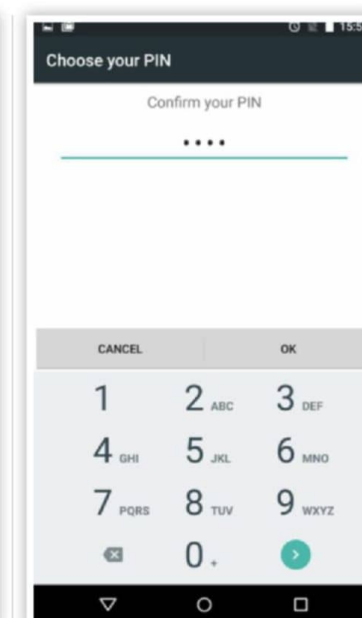
**3** ▶ You will have to repeat the pattern on the next screen to confirm it. Once you are back on the Security Settings screen, take a look at the Automatically Lock option and change it to a period which best suits you. You should choose Immediately or a short period for the best security.



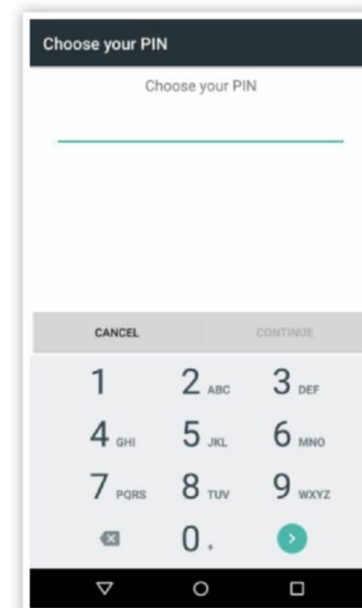
**4** ▶ To add an extra level of security, use the slider to make the pattern invisible when you input it. This stops someone looking over your shoulder and easily seeing the pattern drawn. To check your pattern lock, turn off the screen and then turn it back on again. Enter your pattern.



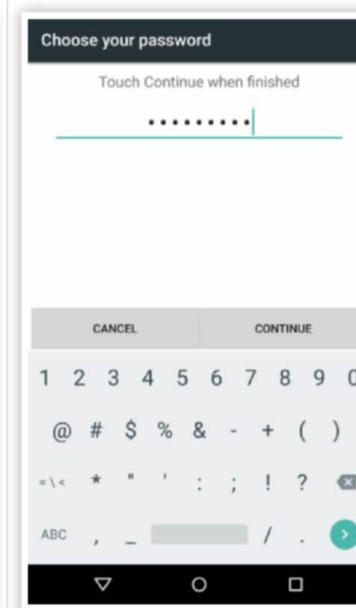
**5** ▶ Both PIN and password locks are inherently more secure than a pattern lock, although they are not quite so quick to input. As when setting up a pattern lock, when you set up a PIN lock, you will be asked if you want to add a PIN on start-up for extra security.



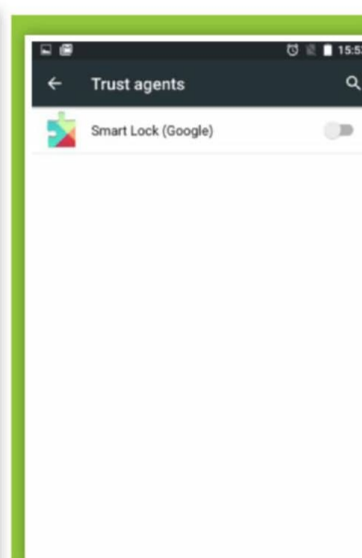
**6** ▶ Your PIN needs to be four numbers (PIN locks are always numerical only), but steer clear of repetition or runs of numbers such as 1111 or 1234, as these are easy to guess. You should also avoid using your birth date or any other easily guessed number.



**7** ▶ As with a pattern lock, you will have to repeat the PIN to confirm it. Once you are back on the Security Settings screen, take a look at the Automatically Lock option and change it to a period which best suits you. Choose Immediately or a short period for the best security.



**8** ▶ A password lock is the most secure type available on your Android device. Passwords can be alphanumeric and therefore the most difficult to guess if you choose well. As with a PIN lock, don't choose an easily guessed word such as your surname.



## Smart Lock

▶ If you are running Lollipop on your device, you can make unlocking easier using Smart Lock for Android. You will need to have a screen lock set up before you can activate Smart Lock. You can read more about Smart Lock elsewhere in this magazine.



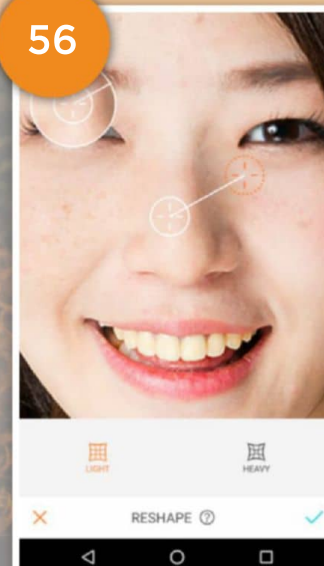


# DO MORE WITH ANDROID

This section is all about getting more from Android and some of the huge variety of apps, tools and features it offers to users prepared to explore. From solving common Android problems and mastering the keyboard your device uses, to planning a journey and making the most of every photo taken on your phone.

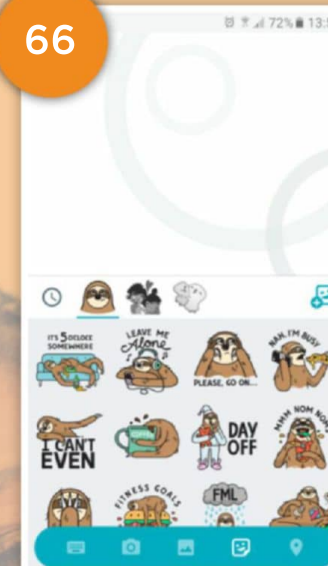
Guide to Android Photography	56	Automate Your Life with IFTTT	84
Navigating with Google Maps	60	Android Security Tools	86
Google Maps Expert Tips	64	Boosting Android Performance	90
Chat and More with Google Allo	66	Reducing the Data You Use	92
Video Chat with Google Duo	70	Manage Multiple Passwords	94
Cast to Devices With Google Home	72	Control Unwanted Interruptions	96
The Ultimate Guide to Facebook	74	How to Use Multi-Window	98
Get Started with WhatsApp	80	Using a System Monitor	100
Find, Download & Read Free eBooks	82	Android Power Saving Tips	102

56



The Essential Guide to Android Photography

66



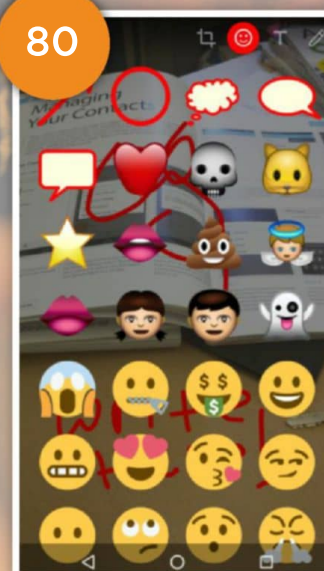
Chat and More with Google Allo

70



Video Chat with Google Duo

80



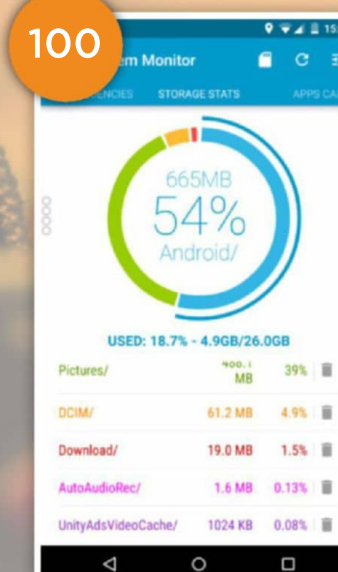
Get Started with WhatsApp

94



Manage Multiple Passwords

100



Using a System Monitor



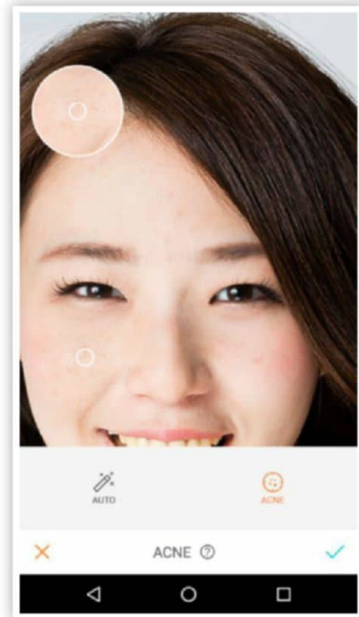


# Guide to Android Photography

How well your Android photos turn out is partly down to the quality of the camera in your device but also to the software the camera uses. Not everyone realises that the camera software is not fixed, and can quite easily be replaced or added to. This guide looks at just a small selection of the software you can add to your camera, as well as some ways to help ensure any photo taken on Android is as good as can be.

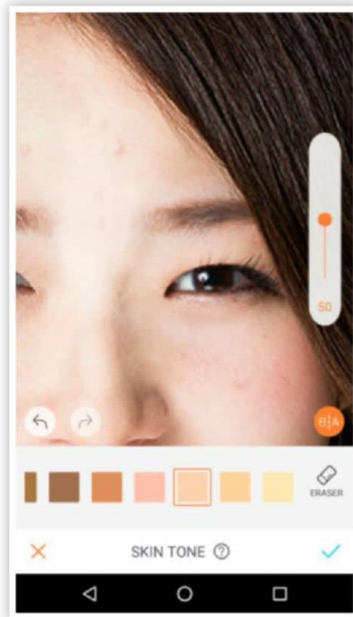
## AirBrush: Easy Photo Editor

AirBrush won't help you take better photos but it certainly can help you to improve the photos you have already taken. It includes loads of airbrushing tools, including these.



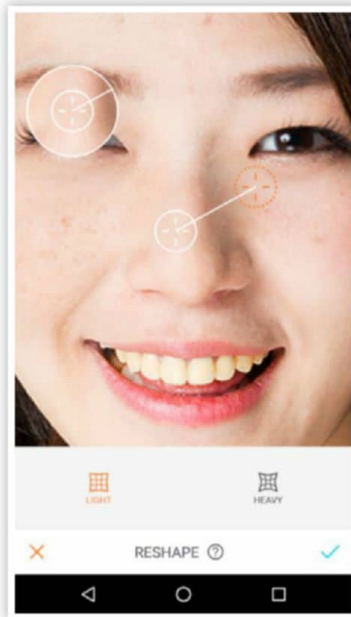
### Blemish

► Remove annoying acne or spots from your photos. Zoom in on the blemish and tap and hold on screen. Move your finger to highlight the spot and then lift your finger off. The blemish should disappear, or at least lighten. You can repeat the action for stubborn blemishes.



### Skin Tone

► Choose a skin tone you desire from the palette at the bottom and then tap and hold on the image. Rub your finger over the photo to gradually change the skin tone closer to the colour you chose. You can be quite bold with your rubbing, as the app is clever enough to avoid non-skin areas.



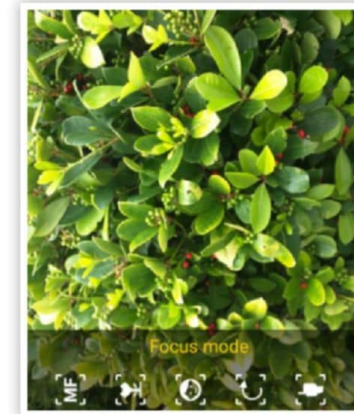
### Reshape

► Reshape does what it says, letting you reshape objects in a photo. That could be a waist, nose, even a group of balloons. Open a photo and tap next to the edge you want to reshape (beside the waist, for example) and then drag your finger in the direction you want to reshape. Easy!



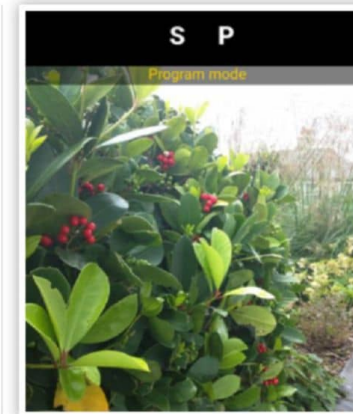
## Camera FV-5 Lite

Camera FV-5 is a professional camera application for mobile devices, that puts DSLR-like manual controls at your fingertips. This is used as a replacement for the native camera app.



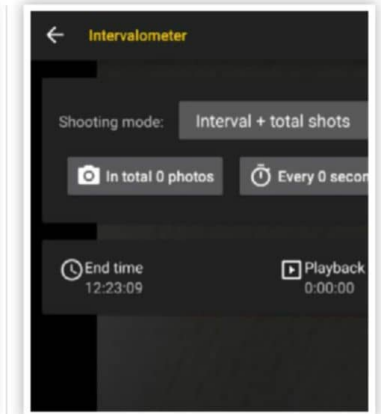
### Focus Mode

► The app gives you much greater control over the auto-focus settings, allowing you to choose from several different modes. These include Auto-focus, Manual-focus, Macro (for close up shots), Face detection focus, Touch focus and even Infinity focus, which is usually found on high end cameras.



### Photographic Controls

► The main photographic controls of exposure compensation (EV), ISO, light metering mode, focus mode and white balance (WB), are always available at the bottom of the screen. Changing those parameters is easy and you always get a preview of the effects reflected on the viewfinder.



### Intervalometer

► The intervalometer can be used to take automated picture series at a regular time interval. One of the uses of the intervalometer is to create time lapses but it has other uses as well. Just set the number of seconds between shots, and the total number of shots, and you are ready to go.

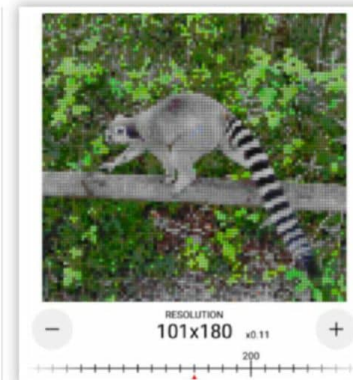
## 8Bit Photo Lab

This app is more about having some fun with your photos. It will certainly appeal to any old gamers who can remember the days of 8-bit graphics, but it can also be used by anyone to create fun photos.



### Random 8-bit

► Once you have opened a photo in the app, tap the randomiser button to flick through different 8-bit or pixelated. If you find a style you like, you can then adapt the style using the secondary controls, increasing the resolution or changing the colour palette from a list of presets.



### Resolution

► Changing the resolution of a pixelated image is one of the easiest ways to quickly alter how it looks. By increasing the resolution you can make the image clearer and by reducing the resolution you can make it less defined (and more pixelated), depending on the result you want.



### Glitch

► The Glitch tool, which looks like a blender icon, lets you simulate different graphical bugs in the image. This means you can randomise further the 8-bit image you have initially chosen. The bugs include: Melt from top to bottom, Scatter pixels, Vertical pixel sort and several more.





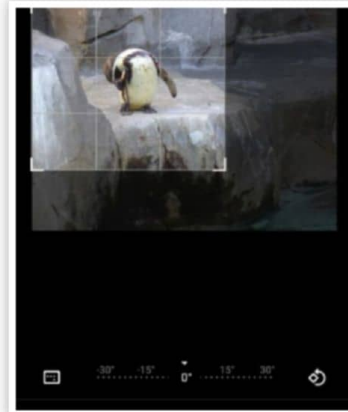
## Android Camera Tips and Tricks

Cameras on Android smartphones vary greatly in terms of features and image quality. However, photos taken with even fairly basic Android cameras can usually be improved by following some simple rules.



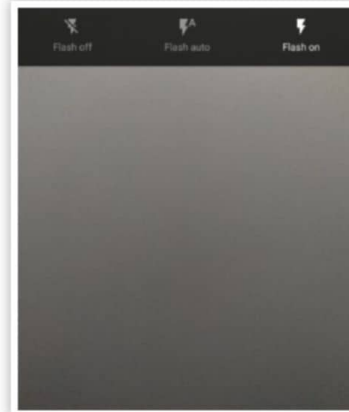
### Clean the Lens

▶ The app gives you much greater control over the auto-focus settings, allowing you to choose from several different modes. These include Auto-focus, Manual-focus, Macro (for close up shots), Face detection focus, Touch focus and even Infinity focus, which is usually found on high end cameras.



### Don't Zoom, Crop!

▶ On most Android phones, the only way to zoom is to use the digital zoom. Digital zoom works by increasing the size of the pixels on screen to make the image larger. Increase the pixel size and you always lose image quality. It is better to crop the focus of the image in a wider shot without zoom.



### Turn Flash Off

▶ If you are in the pitch black, outside, using the flash is probably unavoidable but if you have other lighting options, it is usually better to use them, rather than using the flash. Camera flashes are getting better but still often result in harsh, washed out images.

## High Dynamic Range

HDR or High Dynamic Range, is becoming a standard feature on more smartphone cameras and, when used correctly, can really help to improve photos. HDR mode captures three different versions of a single shot, at low, standard and high exposure. These images are then automatically stacked to create a single image that is hopefully closer to what the human eye sees.

▶ That said, there are certain situations where HDR will produce better results than others and it is worth remembering that just enabling HDR will not save a badly taken photograph.

### Use HDR for:

1. Landscapes. HDR mode is perfect for images of landscapes and nature scenes. You should notice bluer skies and richer details in trees, plants and buildings.
2. Direct sunlight. For those situations where the sun is right behind the subject you're shooting and there's no way around it.

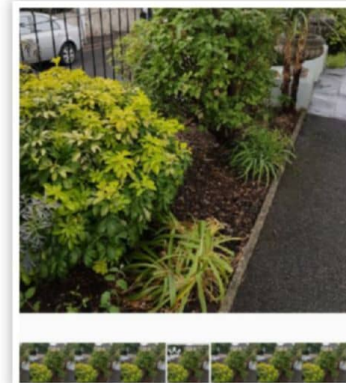
### Don't use HDR for:

1. Action shots. It is very hard to take a good HDR image of moving objects. Moving subjects will usually just result in a blurred composite image.
2. Portraits. Using HDR for portrait images can sometimes result in too much detail. A slightly softer edge is often preferable for photos of people.



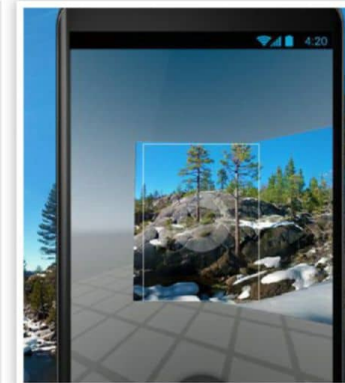
## Camera Modes

Most smartphone cameras, and camera software, give you access to a few different shooting modes. These can really help to create interesting or unusual images if used correctly.



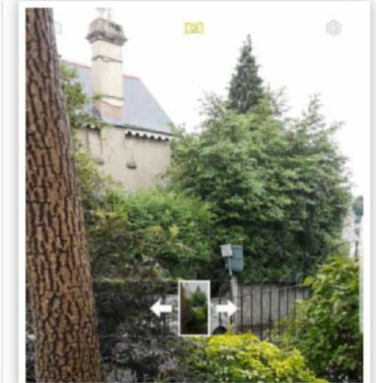
### Burst Mode

▶ A useful mode now often found on smartphone cameras is Burst mode. Burst mode captures up to 20 photos in the space of a few seconds, making it perfect for photos of moving subjects such as children or animals. When the photos are captured, you can go through and select the best ones to keep.



### Photo Sphere

▶ On most devices with Photo Sphere, to capture a 360-degree or wide angle shot, pan or tilt the phone until the circle in the centre of the screen moves over a blue dot and records that portion of the image. Keep moving over the dots until you're finished, then touch the check mark at the bottom.



### Panorama

▶ Normally, with this mode, you find your starting point and take the first picture. To take the subsequent pictures, slowly move the phone left or right, using the screen guide to keep the image aligned. When the panorama frame is full, save the image for review. Panoramas can be very large files.

## Adding a Clip-on Lens

A simple way to improve your camera's capabilities is to add a clip-on lens. These can be bought fairly cheaply (although you can spend quite a lot if you wish) and let you take different types of photo.



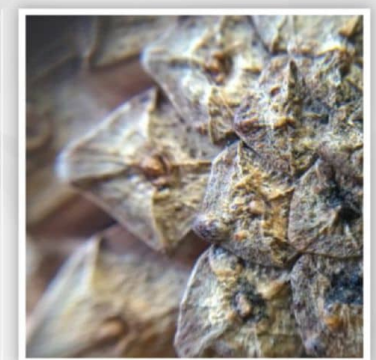
### Olixar 3-in-1 Universal Lens Kit

▶ Enhance your smartphone and tablet photography with this universal 3-in-1 lens kit. Combines fisheye, wide-angle and macro lenses and is unique in that it does not require a special case or adapter. Simply use the clip to attach over the existing camera on your smartphone for immediate results.



### 10x Macro Lens

▶ The Macro lens allows you to achieve shots that are extremely close to an object, great for taking shots of small items to view every last detail up close. With a bit of practice, this lens can give you some really interesting and unique images of even everyday items you find laying around.



### Wide Angle Lens

▶ Perfect for capturing more of the world around you, allowing you to take photos of landscapes and group photos far easier than ever. Think of the wide angle shot as something between standard and panoramic, letting you capture more of a subject without creating a huge image.



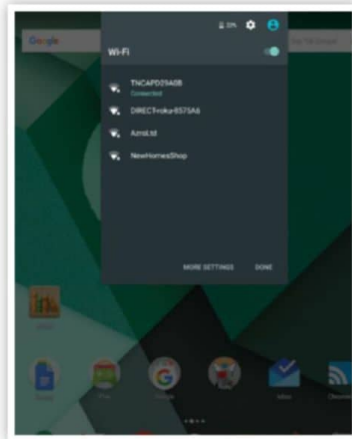


# Navigating with Google Maps

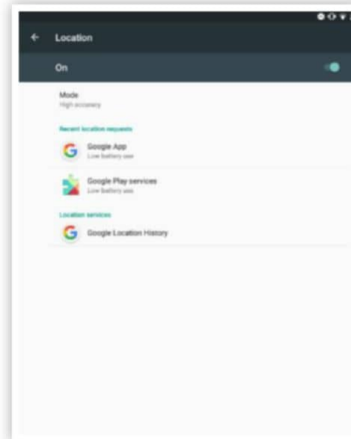
Google Maps is a fantastic tool but it can often be overlooked by Android users in favour of the seemingly more exciting features that their device offers. Google Maps is much more than just a way to find out where you are. It can help you find hotels and restaurants in the local area, show you a list of local plumbers, act as a satellite navigation tool and show you the distance between two points.

## Set Up Google Maps

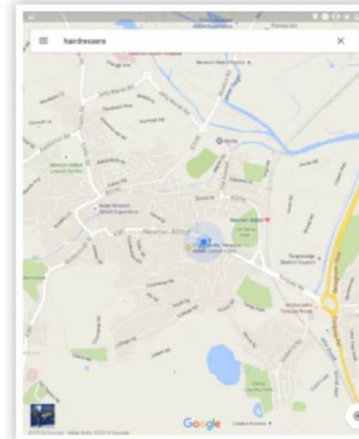
Before you can use Google Maps on your device, you will need to ensure that a few other services are activated. These may vary, depending on where you are trying to use the app.



**1** Google Maps uses Live data, so you will almost always need to be connected to the Internet to use it to its full extent. So the first thing you need to do is connect to a Wi-Fi network or, if you are out of range of a Wi-Fi network, connect to a mobile data network such as 3G or 4G.



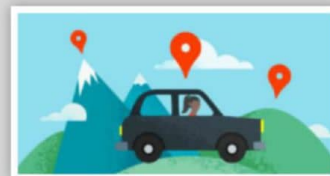
**2** To take full advantage of all the features of Google Maps, you will also need to ensure that Location Services are enabled and that the GPS feature of your device is on. You can use maps without these features turned on but the information shown will be much more basic.



**3** Now that you have a connection and location-tracking is on, you can go ahead and open Google Maps. Give the app a few seconds and it will pinpoint your location and zoom in to show it on screen. You are now ready to start using Maps to find places and navigate your way to them.

## Location History

Location History helps you get useful information such as automatic commute predictions and improved search results by creating a private map of where you go with your logged-in devices. Rediscover the places you've been and the routes you've travelled in your timeline. It's easy to change or delete locations, days or your entire Location History. You can turn it on or off at any time.



### 1. Maps Menu

Tap this to open the main menu in Google Maps. Within the menu you will find links to Your Places. This shows previous searches, etc., maps that have been saved for offline viewing (more on that later) and enabled different map layers.

### 2. Search Maps

You can search for both locations like towns, cities, landmarks, etc. as well as specific businesses or types of business. When you tap the search bar, a list of previous searches, routes and locations will open, allowing you to pick one again.

### 3. Map Icons

As you scroll around the map, you will see various icons marking places of interest, restaurants, train stations and many other things. You can tap any of the icons to see more information in the panel at the bottom of the map screen (tap on or drag the panel up).

### 4. Find North

This is the compass, showing you at all times which direction you are facing. You can tap the compass button at any time to find North. The map view will rotate until it is aligned with North and you can then match it up to the compass.

### 5. Info Panel

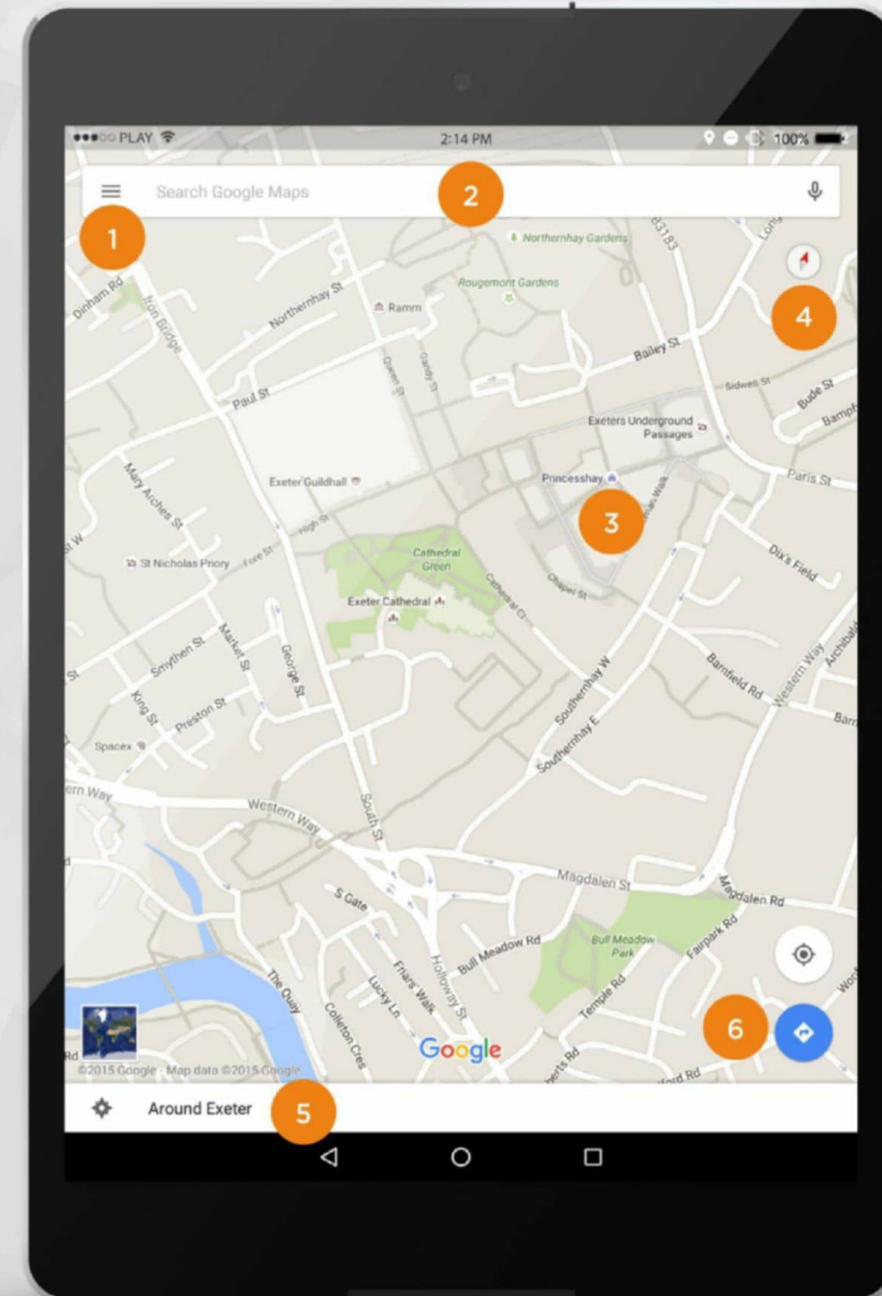
When the map is focused over a town or city, the information panel will show information about that location (bars, restaurants, etc.). Tap or drag the panel up to view the info. If you tap an icon or set a pin in the map by tapping a location, the info panel will show details about that location.

### 6. Find Route

This is the button you tap to start planning a route and using the navigation tool. If you have a pin in the map, tapping this will find a route between your current location and the pin. If you tap it without a pin, a new screen will open where you can enter start and finish points.

### Offline Maps

You can save maps for use offline (when you have no access to a mobile or Wi-Fi network, for example). Depending on the size of the area you save, these offline maps can be quite large and will expire after a certain number of days to avoid filling your storage up. To make an offline map, tap the menu button and select "Offline Maps". Follow the instructions to save a new area.

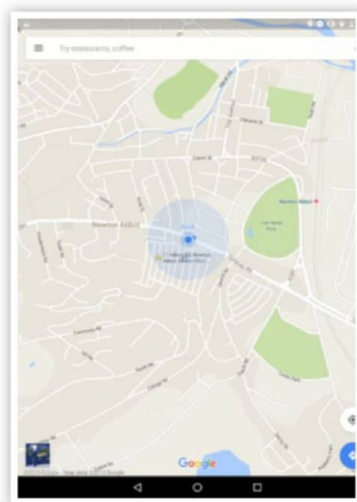






## Navigating with Maps

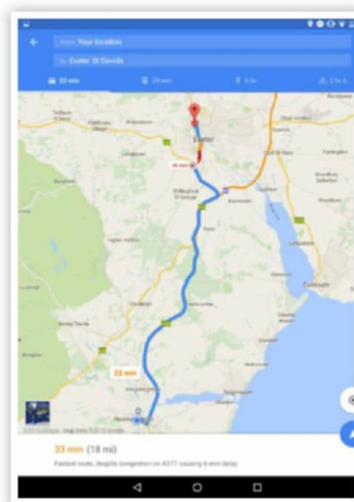
The Navigation option for Google Maps works just like a proper stand-alone Sat Nav. Let Google find your current location, enter a destination and then follow the directions shown on the screen. You can enter the destination by typing or speaking, although the voice option is not 100% accurate.



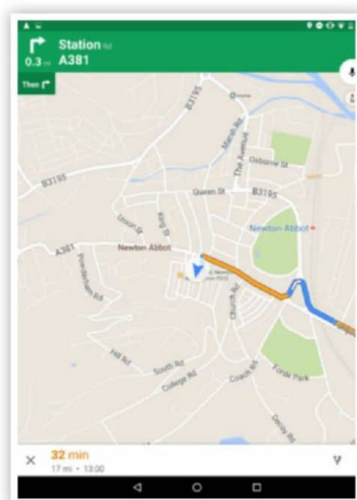
**1** Ensure that GPS, Wi-Fi and, optionally, a data connection are enabled and open Google Maps. Let the GPS pinpoint your current location. If you are indoors, the GPS may struggle to find a satellite, so give the app a bit of time.



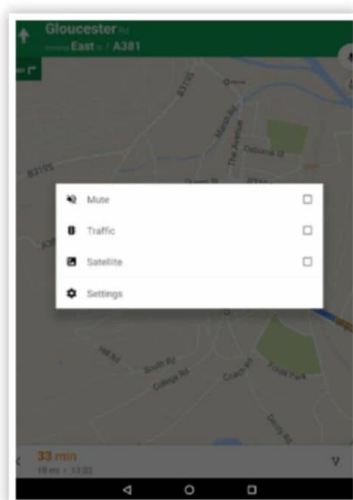
**2** Press the blue Directions button located on the bottom menu that looks like a road sign. Type in your destination (and starting point if not your current location) and then touch the Get Directions button. Enable Navigation if asked (first use only).



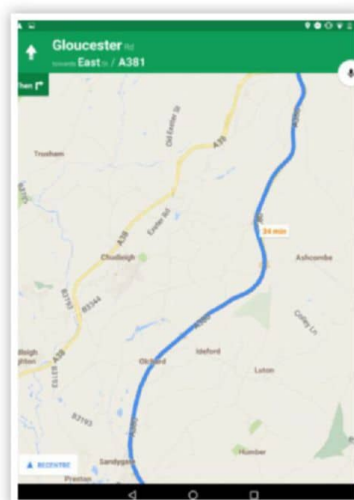
**3** If you have searched for anything in maps before now, you will see a list of your location history on this screen. Tap any to select a previous destination. Once the route is plotted, tap the Navigation button at the bottom of the screen.



**4** The map view will now change. You can now use your device in exactly the same way as you would a standard satellite navigation system. Clip it somewhere you can see it and start driving. You can buy car holders for almost any sized Android device fairly cheaply.



**5** While in Navigation mode, press the Menu button to see options to mute the voice directions, check the overall route, change map layers and exit Navigation. You can tap the mic button to record the audio directions if you wish.

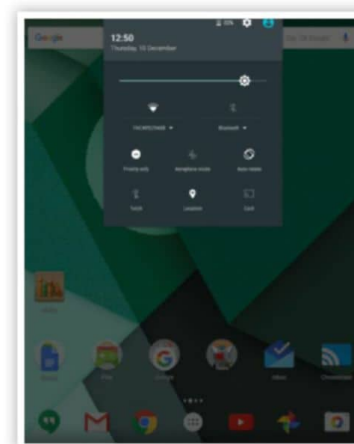


**6** At any time, whilst navigating, you can zoom and slide the map around to suit your needs. To centre the map again, tap the Recentre button at the bottom. To view an alternative route, tap the split arrow button at the bottom right.

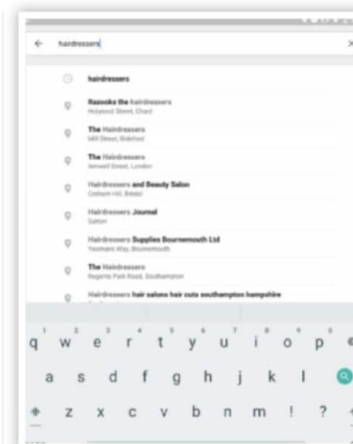


## Local Search

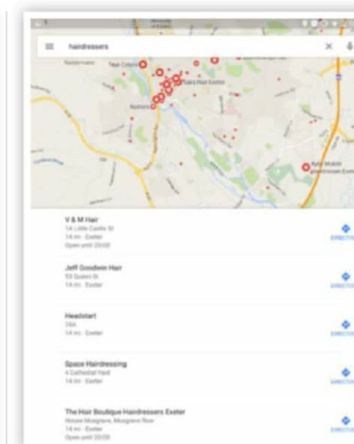
You can use Google Maps to find people, places and businesses in your local area. This is very useful both at home, for locating tradesmen, etc. and also great for finding places to visit or restaurants when you are in an area you don't know: on holiday for example.



**1** Turn on Location, connect to Wi-Fi and open Google Maps. The local search feature also works using just your 3G or 4G connection, which is easier on your battery but isn't quite as accurate.



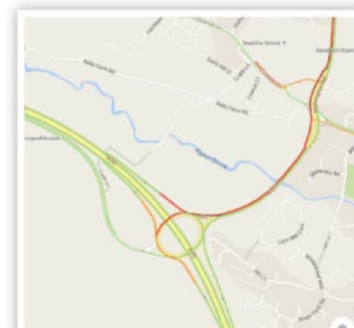
**2** From the main map screen, tap in the search field and type what you want to search for. You can search for specific businesses or just type something like "hairdressers" to see all in that area.



**3** Results relevant to your search will now be shown on the map. The bottom half of the screen contains a list those locations, along with a button to quickly load directions to each one.

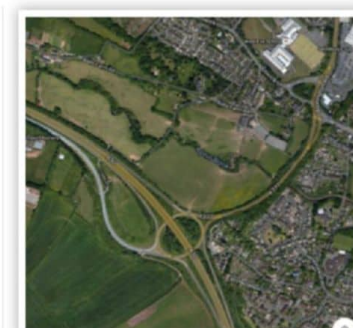
## Map Layers

There are several different ways that you can view the map in Google Maps, from basic block colours to full satellite image. To see the available different layers, tap the menu button in the app.



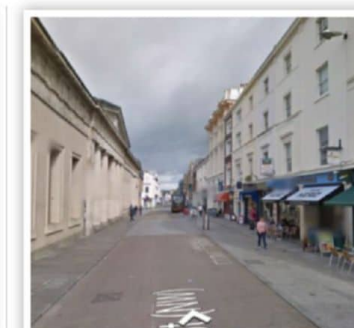
### Traffic

The Traffic layer allows you to see different traffic densities for the roads you plan to travel on. Traffic density is overlaid onto the standard map as a series of coloured lines. Red shows where traffic is heaviest, whilst green shows where it is flowing smoothly. If no coloured lines are shown for a section of road, the traffic information is normal or unavailable for that stretch. The information is usually more accurate in and around major towns and cities.



### Satellite

This changes the map view from block colour to a full satellite image. You can zoom in to the satellite image as you can with the normal map, and the level of detail captured is impressive. You can overlay any other layer onto the satellite view (traffic etc.). If you are using a mobile Internet connection to view Maps, bear in mind that viewing the satellite view will take more data and may cost more money.



### Street View

To see Street View on the Google Maps app, press and hold on the map to drop a pin. Pull up the info sheet to learn more information about that place, find directions, check out Street View and save or share the location by text or email. When in Street View, simply tap the Back button on your device to return to the maps view.

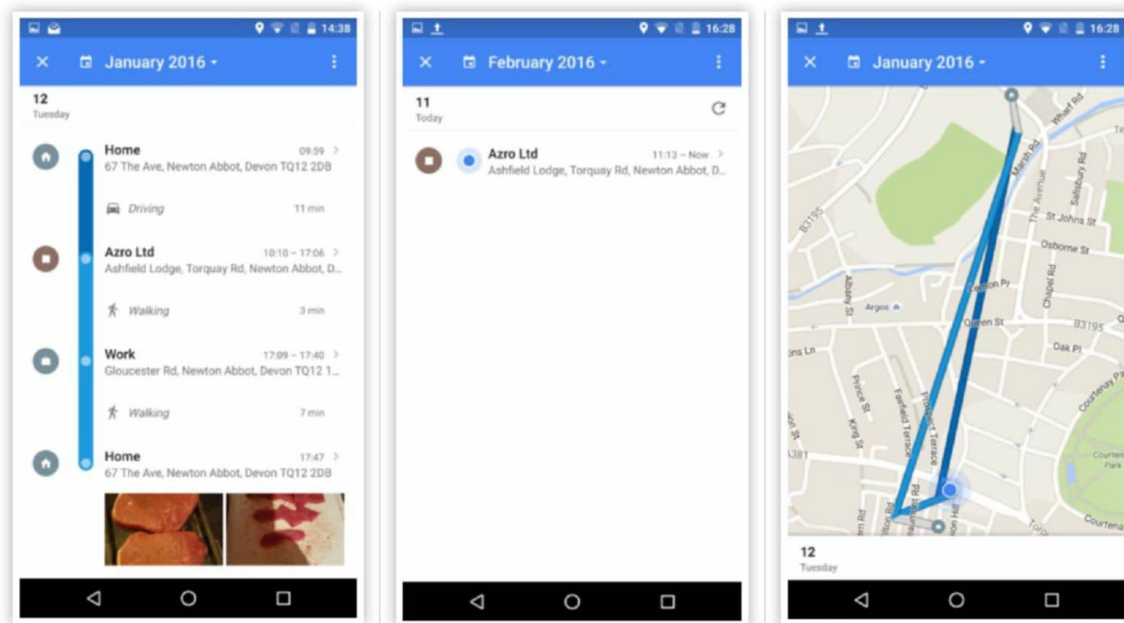


# Google Maps Expert Tips

Google Maps has been around for a long time now, both as a browser tool and as a dedicated app on Android, and other devices. It is one of the key elements in Google's range of free tools and as such it is almost constantly being updated and improved. So much so, that it is often easy to miss announcements and not realise that new or updated features are available. Here are some of the not so obvious ways you can use Google Maps on Android.

## View Your Timeline

Your Timeline has been a feature of Google Maps for a while but it is easy to overlook when using maps on a daily basis. The Timeline allows you to see what searches, and what places you have visited.



**1** Your Timeline, which needs to be enabled before you can view it, is a private record of all the places you have visited, checked in to and taken photos of, whether walking, driving or taking public transport. The record is consistent over any device connected to the same account.

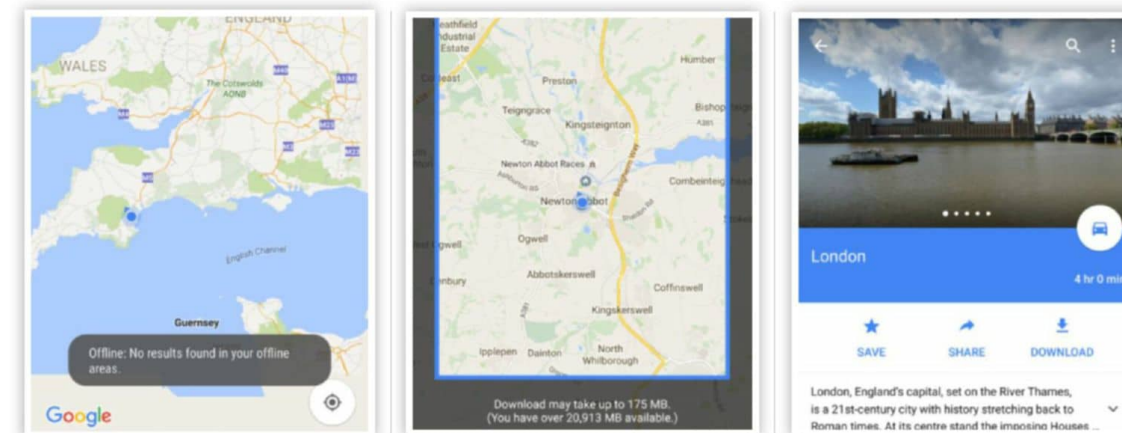
**2** Tap the menu button in Google Maps and tap the Timeline option. If asked, agree to the terms to continue. The default view is the current day, with a list showing your locations. You can see more information about any entry, such as travel method, by tapping it in the list.

**3** Tap the date and use the calendar to navigate to a date in the past. You can then see places you visited on that date, along with sign-ins, photos, etc. Drag the list of places down and a map will appear, showing your route. At the moment, you can only view a single day at a time.



## Saving Offline Maps

You can take a screenshot of a map screen to save it for viewing offline or you can use the built-in offline maps tool. This retains more information.



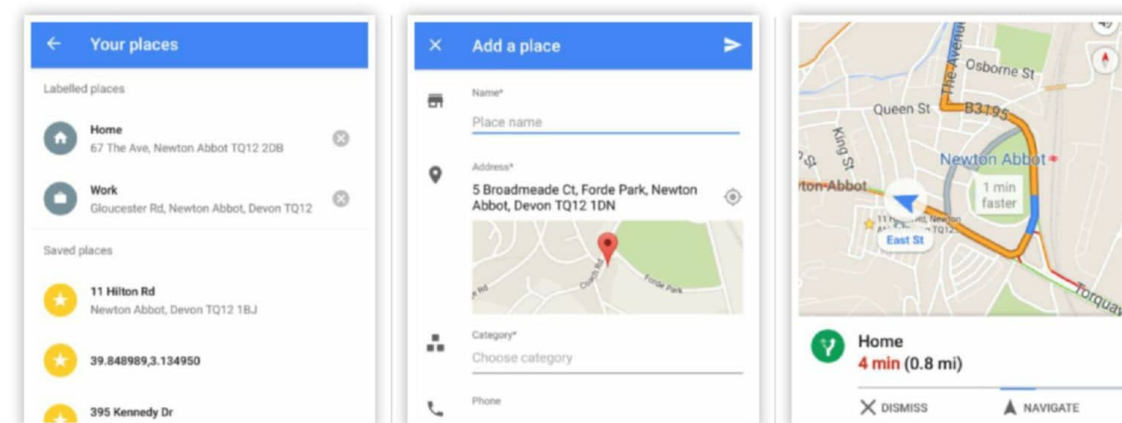
**1** Google Maps needs a connection to the Internet to work to its full ability. If you try to view a new location without either a Wi-Fi or a Mobile Data connection, you are going to be getting lost. Luckily for you, Google Maps allows you to plan ahead by downloading offline maps.

**2** Open Google Maps and search for the city or location area you want to save. Zoom the maps out to a size where the whole city or area is on screen. Tap the Menu button and select the Offline Areas option. Tap the + button at the bottom and then zoom and pan the map to fit inside the box.

**3** You can then download the map for offline viewing. An alternative way to save an area for offline viewing is to insert a pin onto an area of the map, tap the pin and then tap Download from the menu that appears. You will then be given the chance to zoom and move the area to be captured.

## Predict Travel Time

Although you probably won't need directions home from work, any regularly travelled route can be displayed with a predicted journey time.



**1** For this feature to work properly, you will need to have the two locations you travel between, home and work for example, saved in Google Maps. You can check by opening the Maps app and tapping the Menu button to the left of the search field. Tap My Places to see your saved locations.

**2** To save new locations, tap and hold on the map where you want the location to be saved (your house for example), until the red pin drops into place. Tap the pin and then drag the info panel up from the bottom of the screen. Tap Add a missing place and name it "Home", "Work", etc.

**3** Now tap to open the Google Maps menu and select Start driving before you leave the office, to see if there is more congestion than usual. You can also add a shortcut for this new Driving mode to your device's home screen.



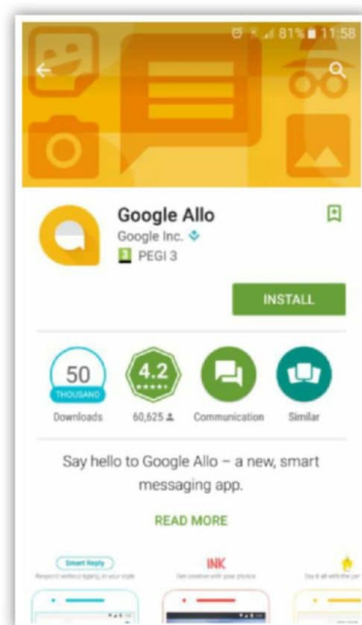


# Chat and More with Google Allo

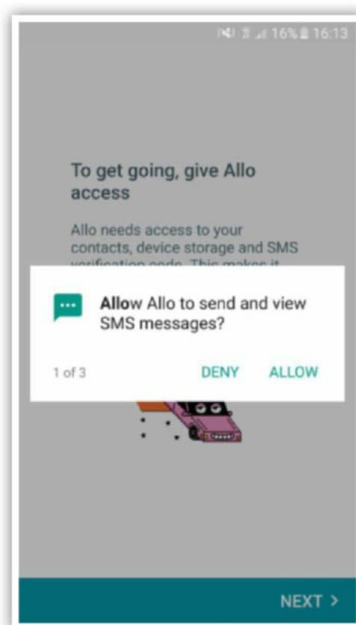
Google Allo is more than just another chat or messaging app, bringing users a whole host of new and rather unique features, including things like Smart Reply and shout/whisper messages. If you have updated your device to Android Nougat, Allo should automatically be installed but even if you don't have the latest OS, you can get Allo from the Play Store.

## Set Up Google Allo

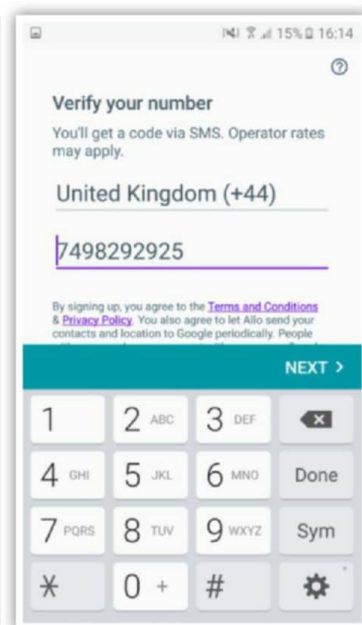
Google Allo works by using your phone number, so you need a working SIM card in your device and take a few security steps to get started. This will help to make your use of the app later an easier and less frustrating task.



**1** Download and install the Google Allo app from the Play Store. Duo is a fairly small app at around 10.5 MB, so download should be fairly quick. It can take a little more time to install, possibly because of security and permissions checks that are made by the app.



**2** Tap the new Allo icon on your home screen or app drawer to get started. If you are running a newer version of Android (Lollipop or later), you will now have to individually agree to the permissions the app needs to work. There are only three and they're nothing to worry about.

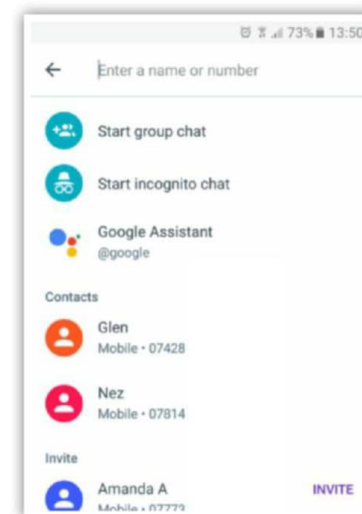


**3** You will now need to verify your phone number. If the number that appears on screen is incorrect, use the keypad to change it. You can then snap a quick selfie, or rush off and tidy yourself up first, to use as your profile picture. Add your name in the last step and Allo is set up.

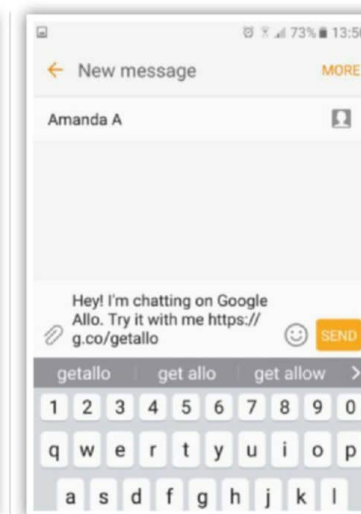


## Chatting in Allo

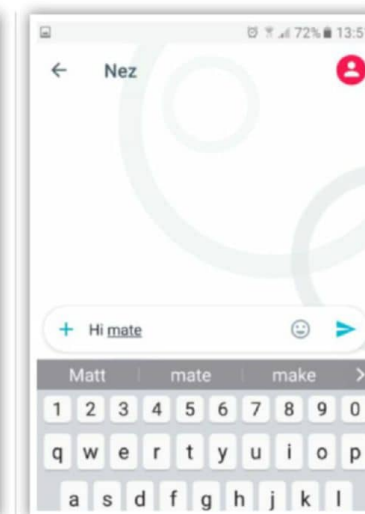
Although there are lots of different chat and message apps out there, Google Allo introduces some new ideas, and improvements on standard features.



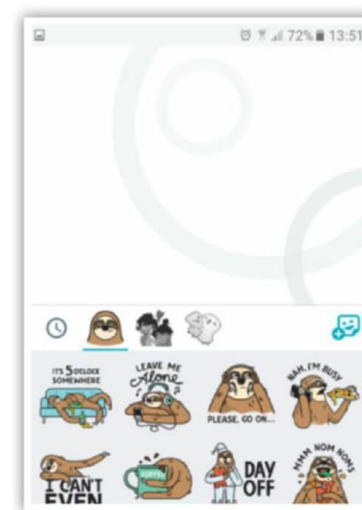
**1** Click the blue new message button at the bottom right of the screen. You now have several options for starting a chat. You can enter the name or number of the contact you wish to message at the top of the screen to bring up their details. You can also scroll and select a contact from the list below.



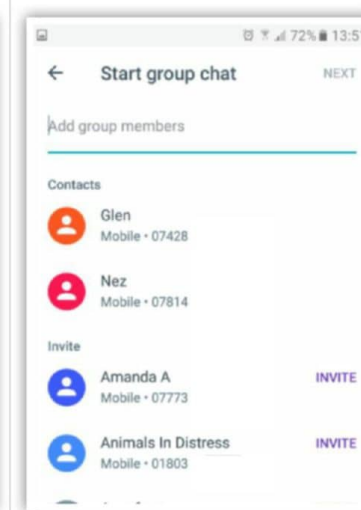
**2** If your contact isn't using Allo, you have the option to send them an invite. Allo is available on Android and iOS phones, so even your friends that use an iPhone can get it. The invite is sent as a standard SMS message, which will be pre-filled with a link to get the Allo app.



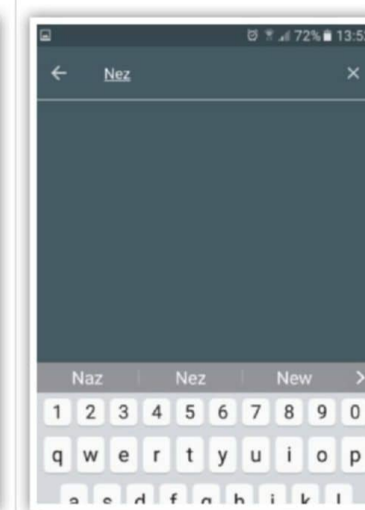
**3** If a contact is shown in the main list (not the Invite List), you can begin messaging them straight away. Tap the name and a new chat window opens. You can then type your message in the 'Say something...' box at the bottom. Tap the arrow to send each message.



**4** The + button to the left of the message box opens a new menu, letting you send a new photo, image from your gallery, a sticker or your location (with a small map image). You can of course add the standard selection of emojis to your messages by tapping the smiley button.



**5** Google Allo also allows you to start Group and Incognito chats. Group chats are fairly self-explanatory. Select the option from the New Chat screen and then tap the names of each contact you want to add to the chat. When you send a message, everyone in the group will see it.

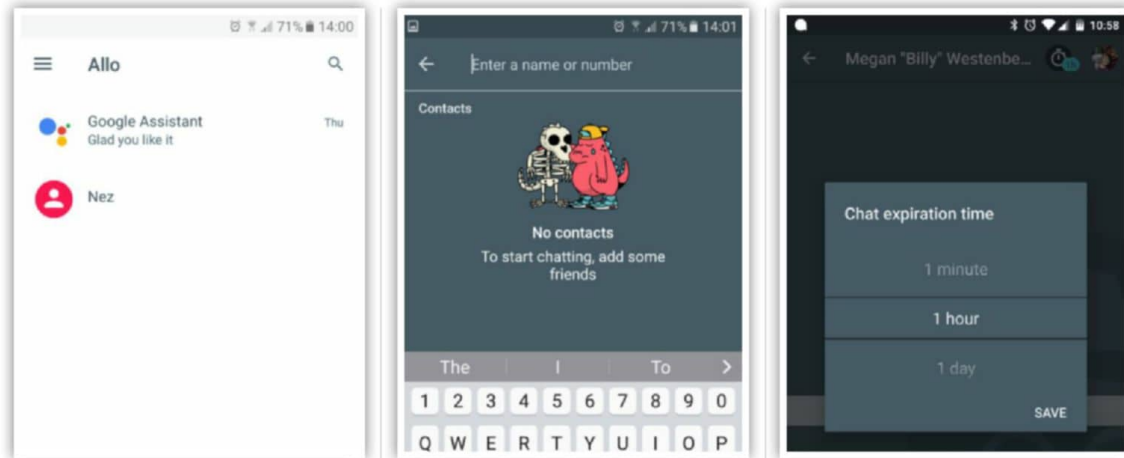


**6** Incognito Chat is a fairly unique feature and a really nice addition to Allo. Incognito chats won't show in the chat list, notifications of new messages don't show details, your chats are end-to-end encrypted and you can even set messages to expire by tapping the timer icon.



## Incognito Chats

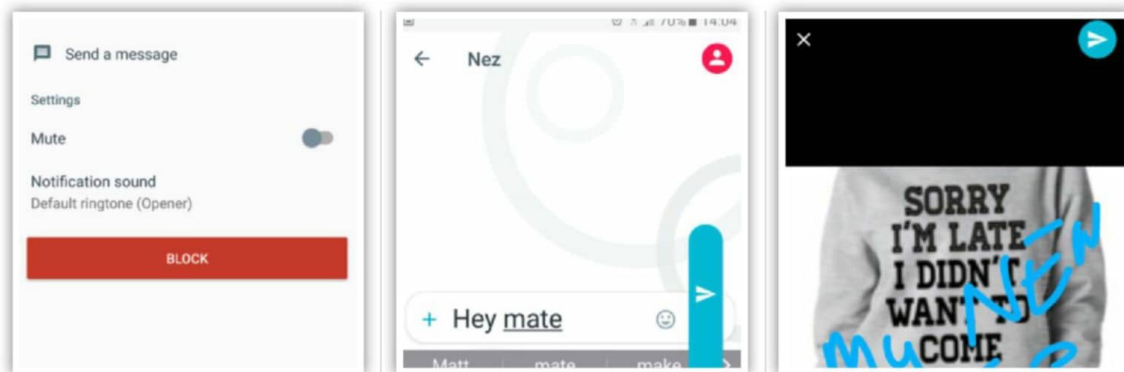
Let's take a closer look at chatting in the incognito mode in Google Allo, one of the most interesting of the new features that are now included.



- 1 ▶ Open Allo and tap the New Chat button and then tap 'Start incognito chat'. From the Contacts list, tap the person's name you want to start a chat with. You can also search for the person's name or number. Group chats, for obvious reasons, are not available in incognito mode.
- 2 ▶ Your chats are end-to-end encrypted and can only be seen by you and the person you're chatting with. Google can't read any of your messages, so you won't see any Smart Reply or Google Assistant features. If you receive a sticker, Allo downloads it securely from Google's servers.
- 3 ▶ To set a message to expire (automatically delete after a set time), tap the timer icon in the top right corner. You can then choose from Never, 5 Seconds, 30 Seconds, 1 minute, etc. to set when the message vanishes. You can set a different timer whenever you start a new chat.

## Chat Tips and Tricks

Google Allo keeps chatting fairly simple (deliberately so) but that doesn't mean that there aren't lots of useful features. Let's take a look at a few message tips and tricks.



### Blocking Contacts

▶ You can block someone from messaging you in Google Allo. Tap the conversation with the person you want to block. In the top right, tap the profile icon > Chat details > Block. Tap Block to confirm you want to block the person. You can see all blocked contacts in the main Allo menu.

### Whisper or Shout

▶ Whispering or shouting in Allo really just means increasing or reducing the size of the message font for a single message in a chat. Useful for showing a message is secret or important, perhaps? To do this, write your message, tap and hold the Send button and use the slider to change font size.

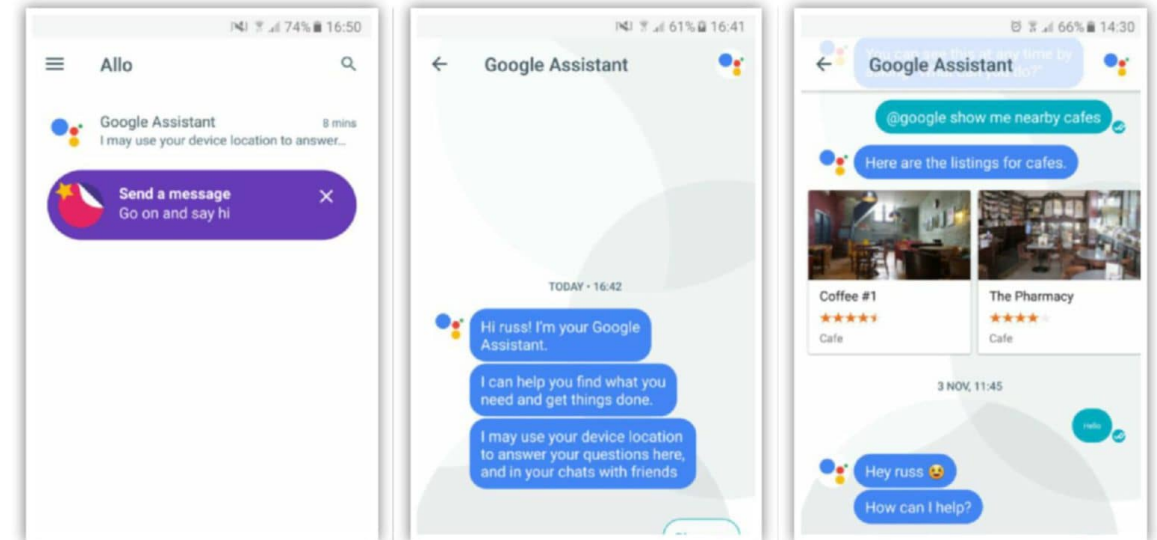
### Draw on Photos

▶ You can draw on photos in messages, adding text with your keyboard or writing a message on screen. Tap the + button on the chat screen, select a photo (or take a new one) and then tap the pencil icon to edit. You can use your finger to draw or write, or tap the text icon and type.

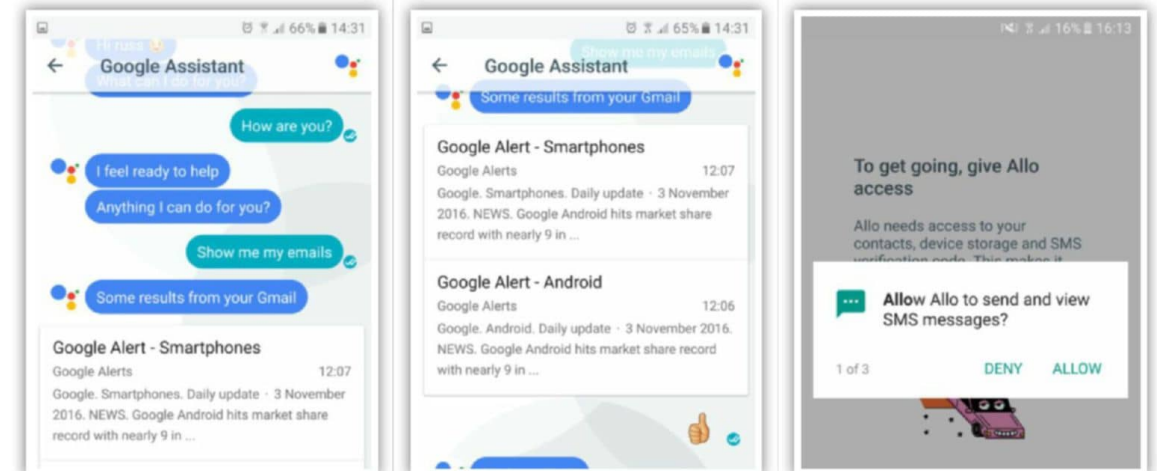


## Using the Google Assistant

The Google Assistant in Allo is really rather clever and it makes sense to take advantage of it. It is completely designed to make you life easier, so why not let it?



- 1 ▶ When you first open the Allo app, you will see a message from the Google Assistant in your list of messages. If you tap on that message the assistant will begin to talk to you, asking if you want to enable location in the app so it can answer questions better. Click 'Ok, go on' if you wish.
- 2 ▶ You can use this chat conversation with the assistant on your own, to ask questions, find information about restaurants, the weather, to subscribe to daily news or jokes and poems or get a translation. All of these things are done in a conversational way e.g., "what is hello in spanish".
- 3 ▶ You can also invoke the help of the assistant during an Allo conversation with another person or with a group. During a chat conversation, simply type "@google" and then what you want to know. For example, "@google show me cafes nearby" or "@google what time is sunset tomorrow?".



- 4 ▶ The conversation is not interrupted in these situations, with the results or answers being shown within the conversation itself. Sometimes, when the assistant provides an answer or shows you some information, it will let you give it a thumb up or down, helping it learn to answer better.
- 5 ▶ You can also use the mic to ask the assistant for help. Your Assistant understands natural language, so speak as you normally would to a person. If you connect your Google Account to Allo, your Google Assistant can give you more personalised information, like your agenda or photos.
- 6 ▶ You can choose what is shared with the assistant. By default, when you begin to use it in Allo, the assistant can access your Allo profile information, your phone number and group chat information. It will ask for permission to use your location, contacts info and Google account info.





# Video Chat with Google Duo

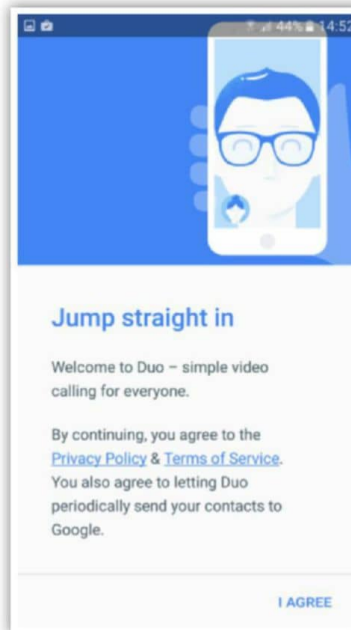
Video calling is the next best thing to being with someone in person but too often it can be a frustrating experience. You shouldn't have to worry about whether your call will connect or if your friend is using the same type of device. Google Duo is a simple 1-to-1 video calling app available for Android and iOS that takes the complexity out of video calling, so that you can just get on with chatting. Duo is an official Google app and is available completely free from the Google Play store. Calls are also free, although an Internet connection is required.

## Set Up Google Duo

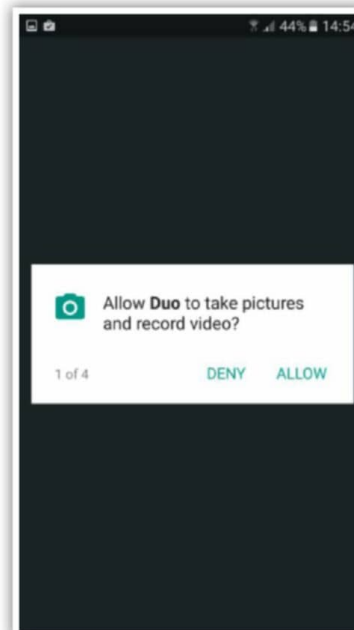
Google Duo works by using your phone number, so you need a working SIM card in your device and then take a few security steps to get started.



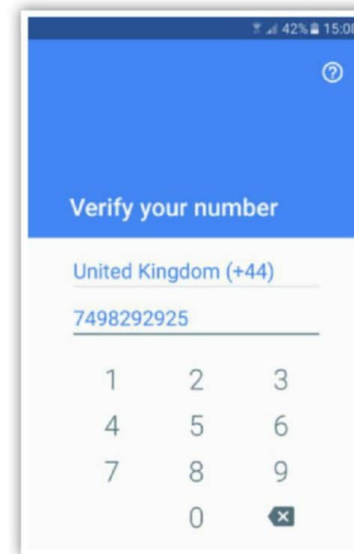
**1** ▶ Download and install the Google Duo app from the Play Store. Duo is a fairly small app at around 8.8 MB, so download should be fairly quick. It can take a little more time to install, possibly because of security and permission checks that are made by the app.



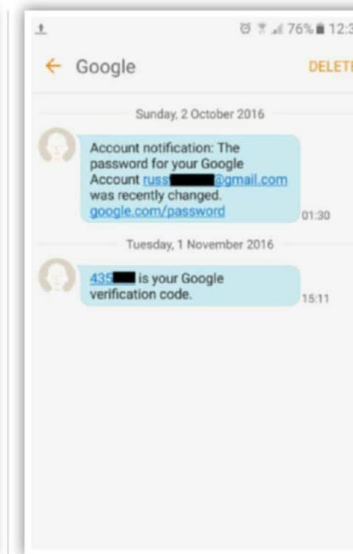
**2** ▶ Tap the new Duo icon on your home screen or app drawer to get started. As with many such apps, the first thing to do is read and accept (or just accept) the privacy agreement and terms of service. These are different to the app permissions, i.e. what the app can use on your device.



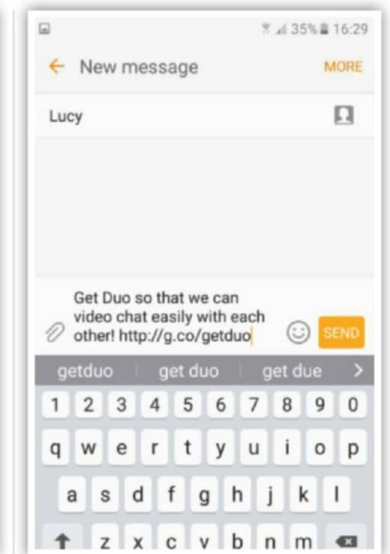
**3** ▶ If you are running a newer version of Android (Lollipop or later), you will now have to individually agree to the permissions the app needs to work. Deny access to any one of these permissions and you will not be able to continue setting up or using the Duo app.



**4** ▶ The app should now automatically detect your phone number and ask you to verify it. Your phone number is key to the app working properly, so take a moment to check it. If the number is wrong, as it was for us for some reason, simply click on it and change it.



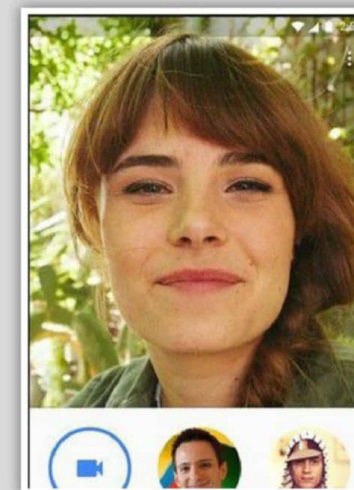
**5** ▶ You will now get an SMS message showing your verification code. If the app is open when you get the message, and showing the verification code input screen, it will automatically be verified. If not, open the message, copy the number and input it into the app.



**6** ▶ To start a video call, tap the Video call button at the bottom of the screen. If you have no contacts who use Duo currently, you can easily send them an invitation to install the app by tapping their name in the list that appears. A preformatted message is then ready to send.

## Video Calling with Duo

With the app set up and some contacts added, you can begin using Duo as the no fuss video-calling tool it was designed to be.



**1** ▶ To start a video call, open the app and tap the button. If you have made calls previously, recent contacts will appear at the bottom of the main screen. Tap any of the recent contact icons to call that person or tap the Video call button to see a full contacts list.



**2** ▶ When your contact answers, the image will go full screen. The normal small image of your own face should also appear in the bottom left corner of the screen. You can change some of the call settings by tapping the small menu button at the top right of the screen.



**3** ▶ When you receive a call from another Duo user, you will see and hear the 'Knock Knock' screen. This displays who is calling, with an alert to notify you if you are away from your device. You can then simply tap or swipe up on the camera icon to answer and start the call.

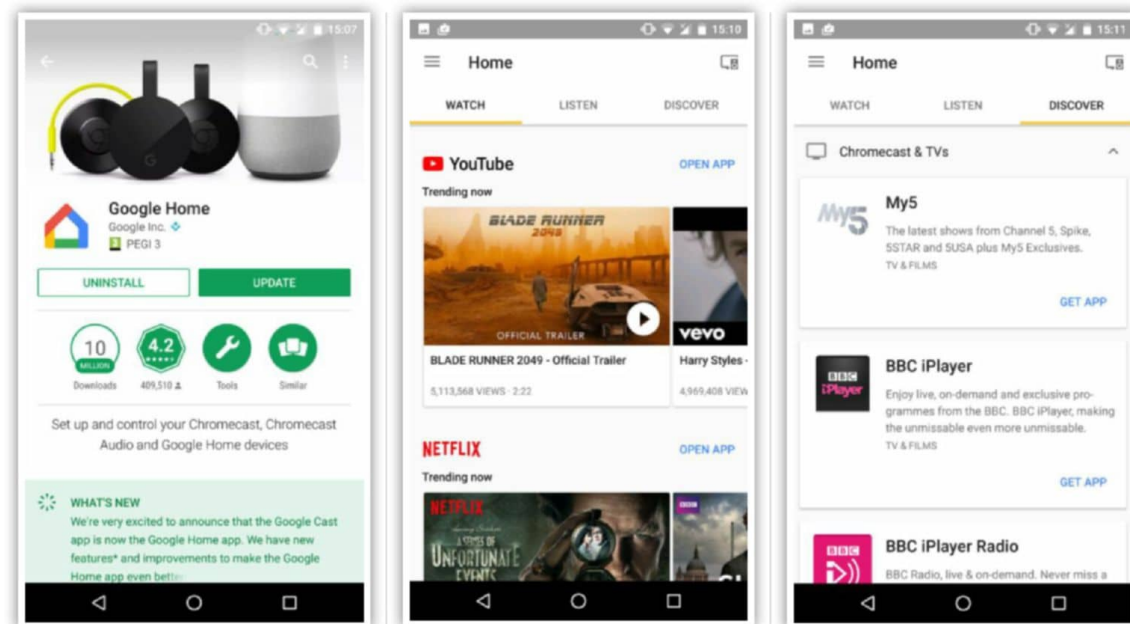


# Cast to Devices with Google Home

Google Home is the new personal assistant device from Google, a speaker and microphone system that allows you to control devices, get news reports, set reminders and command your music. It is accompanied on Android by the Google Assistant and the newly updated Home app that combines control of the Home speaker and other Google devices such as Chromecast.

## Connecting Home Devices

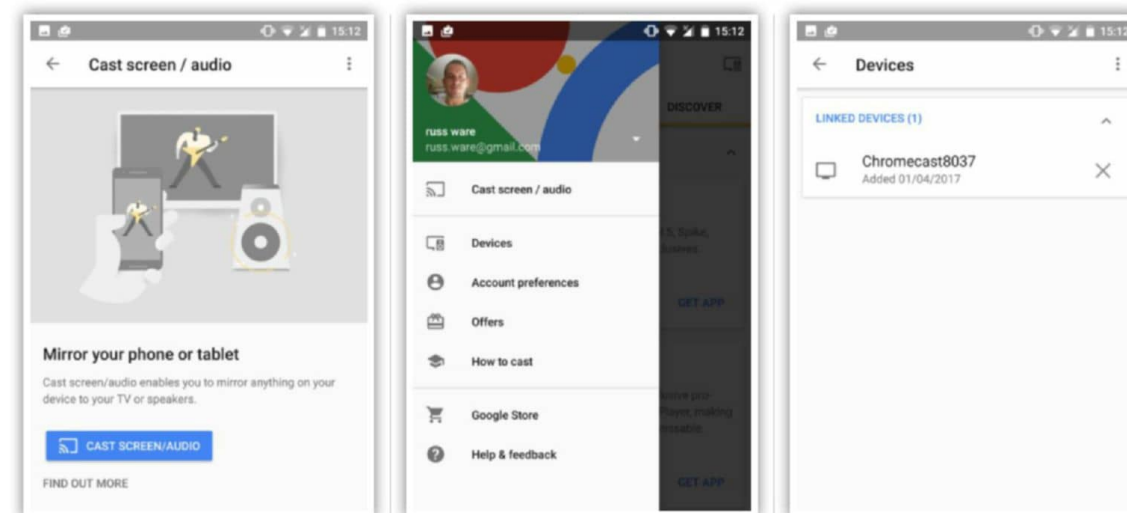
Before you can begin to use these connected-home devices, such as Chromecast and Google Home, you need to make sure that your phone or tablet and the device can talk to each other.



**1** ▶ The Home app has replaced the Google Cast app, so if you are still seeing Google Cast on your phone or tablet, you should head into the Play Store and check for app updates. If you are using a very new Android device, such as the Pixel phone, Home should already be there.

**2** ▶ Open the app and you will see a selection of content sources in the Watch tab. The sources shown here will vary depending on the apps you have installed, so if you have Netflix and BBC iPlayer installed on your device, highlights from those apps will appear here.

**3** ▶ The Discover tab lets you find new ways to find content. This is essentially just a list of apps that are compatible with casting to various devices, be it music, movies or TV shows. If you want to add one of the apps shown here, tap the button and install through the Play Store window.



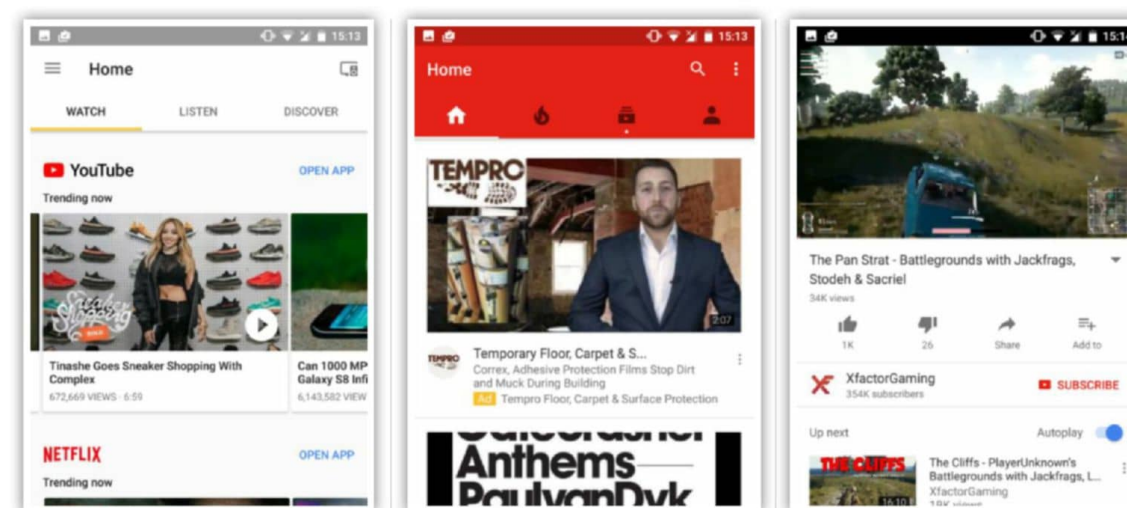
**4** ▶ You can use Home to cast to a variety of devices, including the Chromecast, Chromecast Audio and the Google Home speaker. To begin, you need to first detect any of the compatible devices with the app. Make sure your devices are powered on and ready to go.

**5** ▶ Tap the menu button on the Home app or tap the devices button in the top right corner. You will need to allow Location services for the app at this point if you haven't already. Once location settings are set, the app will begin to scan for devices connected to the same network.

**6** ▶ Once your device is detected, connect to it and follow any instructions to name it. You can add several devices to your Home app and choose which to cast to as and when you need to. As well as casting content from the various content sources, you can also cast your device screen.

## Casting to Devices

Once you have Home set up, you can use it to cast content to your connected devices. This could be music to Google Home or Chromecast Audio or video content to Chromecast.



**1** ▶ Let's take casting a video from YouTube to a Chromecast as an example. The process for casting to Home or Chromecast Audio will be much the same. The next few steps assume that you have found your Chromecast device and it is set up and ready to be cast to.

**2** ▶ Open the Youtube app (this could just as easily be Netflix, Play Movies or any other app capable of casting) and search for the video you want to watch on your Chromecast-connected TV. Tap to play the video and you should see the Cast icon at the top: a TV screen with three lines in it.

**3** ▶ Tap this icon and select the device you want to cast to. In this case, we just have the Chromecast to choose from but you can have several devices connected. The content will be sent to the device and begin playing on the TV (and stop playing on your phone or tablet).



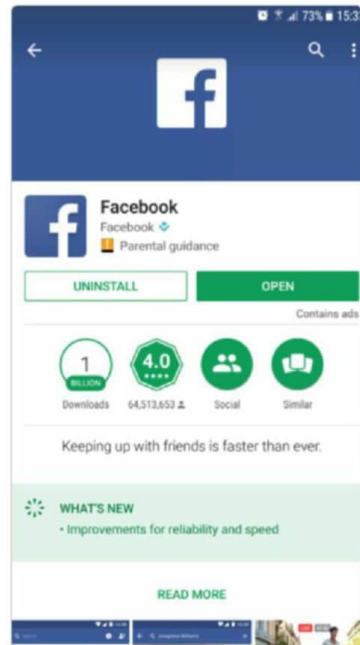


# The Ultimate Guide to Facebook on Android

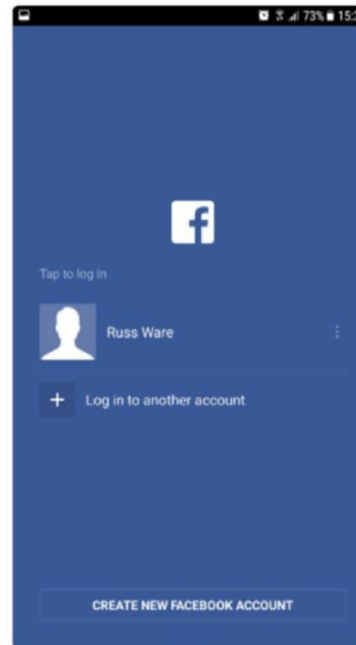
If you have used Facebook on a computer, you might assume that using it on your Android phone or tablet would be the same. Whilst there are lots of similarities between the browser and mobile versions of Facebook, there are also some important differences. There are also some very cool tricks the mobile version allows that can make using the world's largest social network much easier.

## Facebook App Setup

This guide assumes you already have a Facebook account set up on a computer. If not, you can create one easily at [www.facebook.com](http://www.facebook.com) or by clicking the link on the login screen of the app.



**1** Download and install the Facebook app from the Google Play store. Facebook is one of the larger apps you will find on Google Play, so it might take a little while to download, depending on your Wi-Fi Internet or mobile data connection speed. It will then automatically install.



**2** Tap the Open button and enter your Facebook login details in the spaces provided. As mentioned, there is also a link to create a new account if required. There is also a link to tap if you have forgotten your password. With your details entered, tap the Log In button.



**3** You may see the option to let your device remember your log in details, to speed up getting in to your account next time it is needed. You will then allow or deny Facebook permission to access the device's location. You can always change this later but to get the most from the app, tap Allow.



## Navigating the Facebook App

The Facebook app is laid out differently to the browser version, even on the larger screen of a tablet. Let's take a look at the key part of the app on a mobile device.

**1 Facebook Camera** - The new in-app camera allows you to quickly send photos and videos to individual friends, add images to your Story or create a new post based around an image or video. The camera includes lots of filters and effects, including the ability to add masks (like those seen in Snapchat) in both still and moving images.

**2 News Feed** - In this image, the News Feed is selected. This is where you will see status updates from your friends, as well as posts from any pages you follow. You can see that the name of the person or page posting is displayed (NME in this case) along with how long ago it was posted. Feed options hide under the small arrow on the right.

**3 Friend Requests** - If you have any new friend requests, they will displayed when this tab is tapped. You can confirm or delete friend requests at the top of the tab and then scroll down to see suggestions for friends you might wish to add. Tapping the blue friend button at the bottom right allows you to search for friends and upload a contacts list.

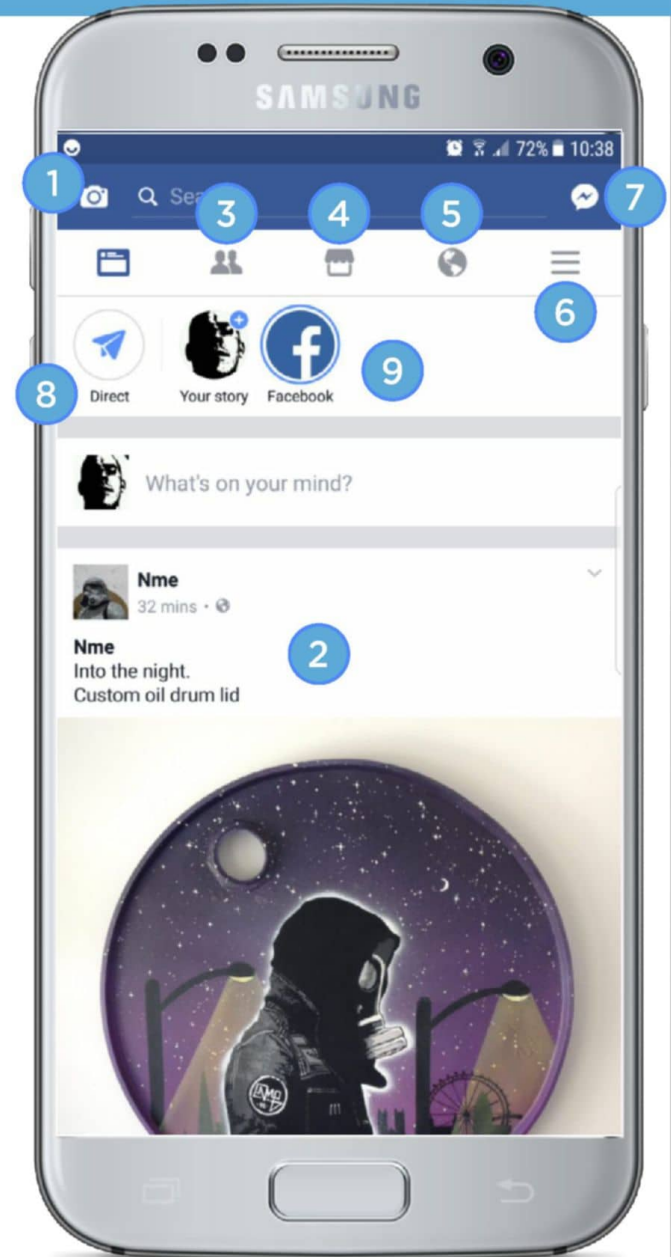
**4 Marketplace** - The marketplace is somewhere for you to sell unwanted items to others based on your location (not just to Facebook friends). You can view items by category using the circles at the top of the page. To sell your own item, take a photo of it and then tap 'What are you selling?'. Complete the information requested and tap Sell.

**5 Notifications** - If someone comments on one of your posts, tags you in a photo, mentions you or likes something you have posted, you will see a notification badge here. Click the notifications tab and you can see a list of notifications, sorted into the order which they appeared. Tap any notification to see the post it refers to. Blue-shaded notifications are unread.

**6 Facebook Menu** - This is where you can find all of the settings and options for the Facebook app, as well as where you look to see all of the things that appear in the left-hand sidebar on the browser version of Facebook. Things like Events, Pages, Groups and Apps will appear here. Not everything you can see in the browser version will be here.

**7 Facebook Messenger** - Facebook Messenger is the stand-alone app you need to install if you want to be able to instant chat through Facebook. Tap this icon to seamlessly open Messenger, where you can start new conversations or click on conversations you have already started, even if you started those in the browser version of Facebook.

**8 Direct** - Direct is a new direct messaging feature of the Facebook app, allowing you view replies to your stories or send you photos and videos. It works something like a comments feed but privately between yourself and the person who replied to your story etc. Once the conversation ends, the images or videos sent will disappear.

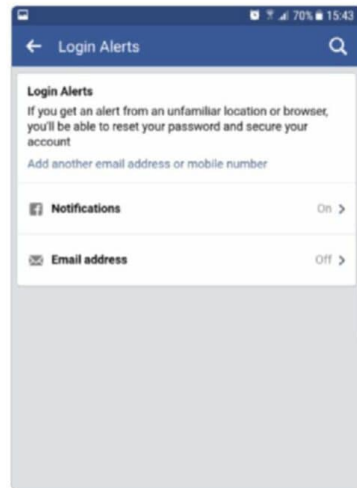


**9 Stories** - Think of Stories in Facebook like messages made up of images. If you have ever used Snapchat, it is a similar feature to stories seen in that app. You create your story and either send it to someone using Direct, or you make it available to your friends. It will appear at the top of their News Feed for two days before disappearing.



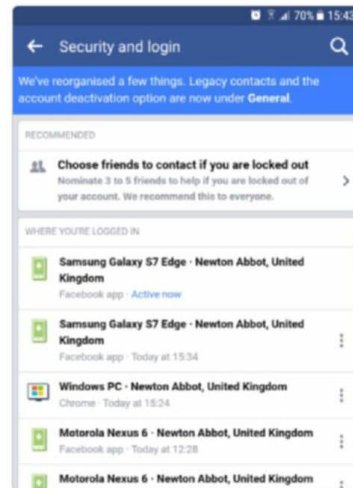
## Facebook Security and Privacy

With the Facebook app up and running on your device, the next thing you should do is check and edit the privacy and security settings. Tap Menu > Account Settings while in the Facebook app.



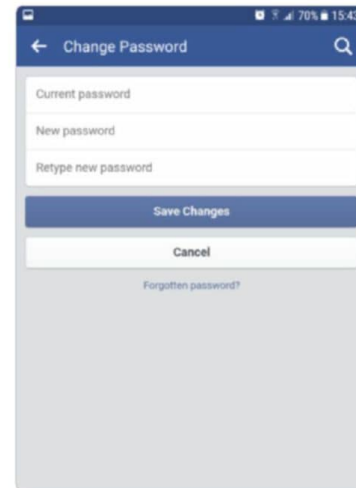
### Login Alerts

If you are concerned that someone is logging in to your account without your knowledge, the first option is to immediately change your password. Another option is to enable Login Alerts. This lets you choose a method, i.e. email or sms message, of letting you know when a new device logs in.



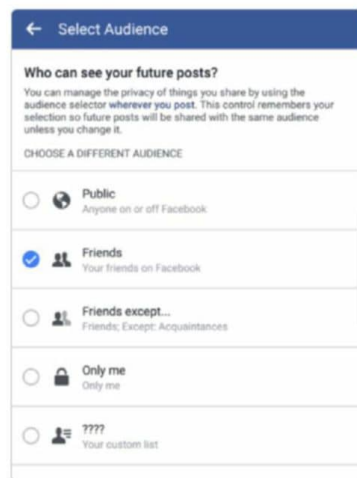
### Known Login's

The security settings includes an section called Where you are logged in. This lists all of the devices (phones, tablets, computers) which have accessed your Facebook account in the past. It is a good idea to clear this list if you are using the Login Alerts option.



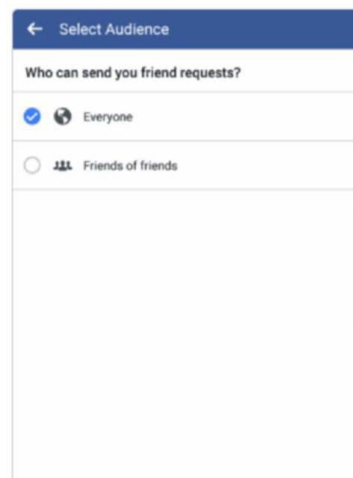
### Change Password

Changing your password is one of the simplest ways to add security. Ideally, use a combination of at least 6 letters, numbers and punctuation marks. Avoid including your name or common words. Don't use your Facebook password anywhere else online and never share your password.



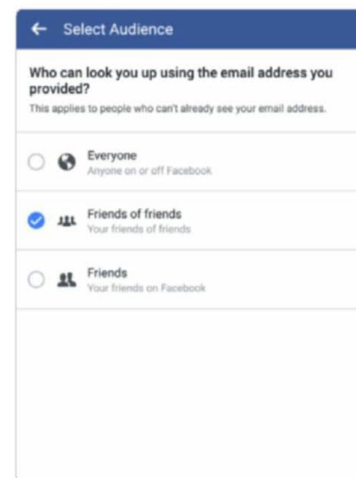
### Who can see my stuff?

Move in to the privacy settings and you can see controls for who can see your posts, including images, that you add to Facebook. You can change who sees future posts (from this point on) or you can limit future and old posts. Content you have shared may change for some people.



### Who can contact me?

This controls who can send you friend requests, Anyone or Friends of Friends, and how messages are filtered out within your inbox. Basic filtering allows you to see messages mostly from people you know but the occasional unknown contact may get through.



### Who can look me up?

This section controls how visible you are, or to be more exact, how visible your Facebook profile information is. If you want to allow people to be able to view your email and phone number used when setting up your account, leave as is. If not, change these settings as a priority.

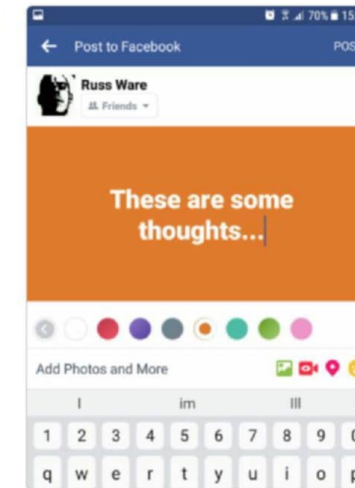


## Posting on Facebook

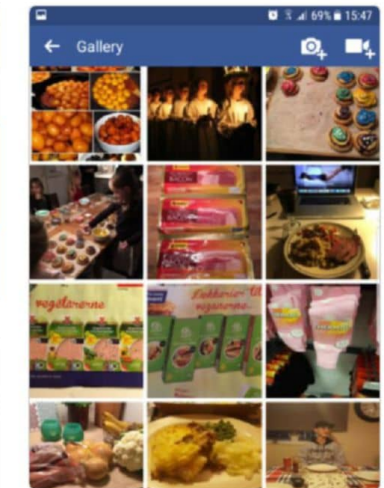
Posting a message to the News Feed, sometimes known as "Updating your status", has changed over time to include several different features and post types.



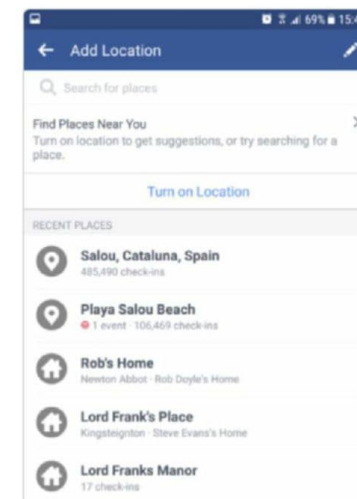
1 To create a new post, simply tap the 'What's on your mind?' at the top of the News Feed. In its simplest form, a post is made up of just text. You can type in the box that opens and then tap the Post button at the top right of the post creation screen. Your post then appears on the News Feed.



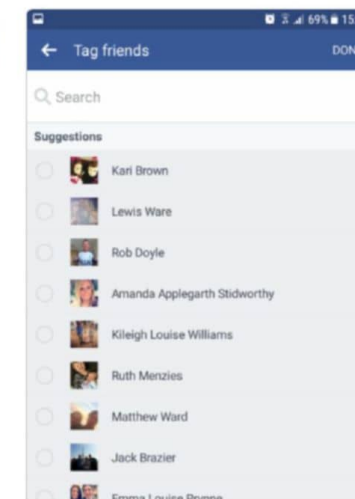
2 A relatively new feature of Facebook posts is the ability to change the colour of the post background. You choose the background colour by tapping the multi-coloured Aa button at the bottom of the post text box. Tap any of the coloured circles to apply that colour.



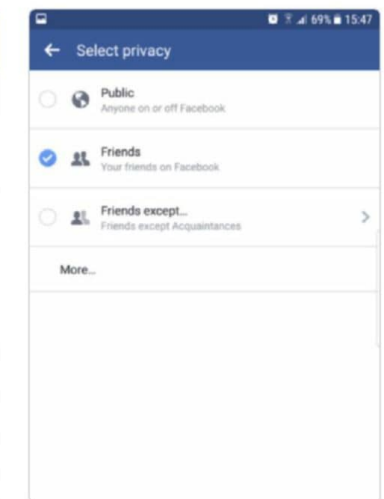
3 If you want to add a photo or a video, tap the Photo/Video button below the text box when you are creating a post. You can then either choose an existing image on your device, or tap the camera buttons at the top-right (still and video), and grab a new image to post.



4 If you want to tell your friends on Facebook where you are when you are posting, you can Check In. Using your location, Facebook will pull up a list of suggestions and previous check in locations. You can either pick one of these or create a brand new check in location.



5 If you want to alert friends to your post, you can tag them in the update. Tagging means that the person will see a notification when they next check Facebook, making it a great way to ensure someone specific gets to see the post. Typing their Facebook name in the text box has the same effect.



6 You can choose who sees each post on an individual post basis. Write and configure your post with images, etc. Before you tap the Post button, tap the button just below your name to open the privacy menu. This lets you choose whether your post is public, seen by friends or by friends of friends.





## Using Facebook Messenger

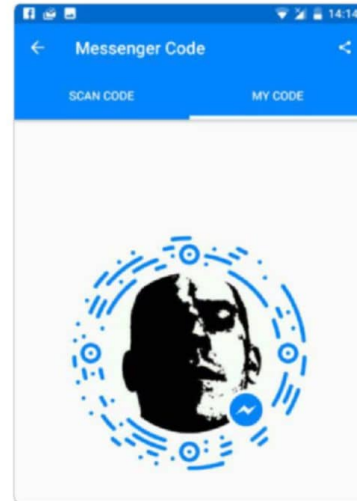
Although designed primarily for use on phones, Facebook Messenger can be used effectively on your other Android devices. Additional features include group chats, easier photo sharing and Chat Heads.



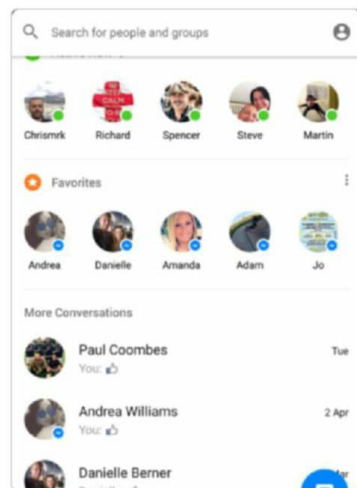
**1** You will need to have the Facebook app installed on your device before you can use Facebook Messenger. Once you have installed Facebook and logged in with your account details, look for the Messenger chat bubble icon at the top of the main interface.



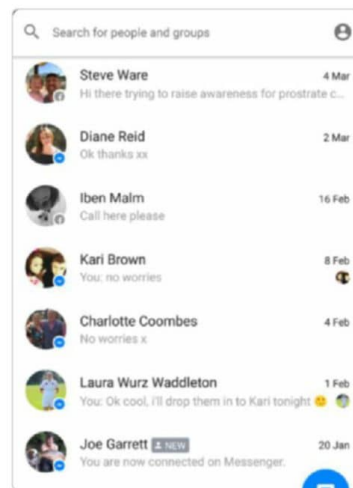
**2** Technically, the Facebook Messenger chat feature is a separate (but linked) app, so you will now need to install it. You can search for and install the app from the Google Play store but it is just as quick and easy to do it through the Facebook app. Just tap Install.



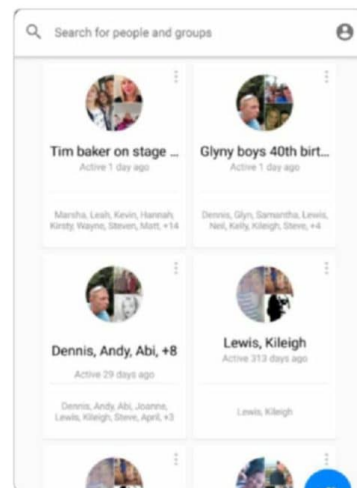
**3** To have a normal instant chat with any one of your Facebook Friends, open the main Facebook app and tap the messenger chat bubble icon at the top of the screen. If this is the first time you have used the app, you will be prompted to Open Messenger and then sign in (using your FB details).



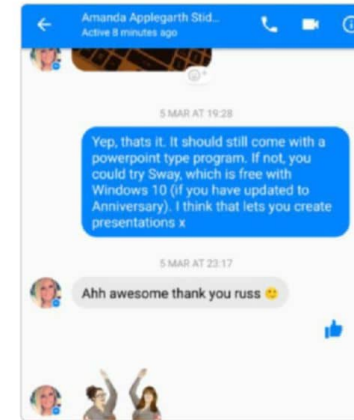
**4** A list of any recent chats, including those from other devices, will be shown at the top. These are just below the new area for the Messenger Day feature. This allows you to show your friends on Messenger what you are up to and to encourage them to interact with you.



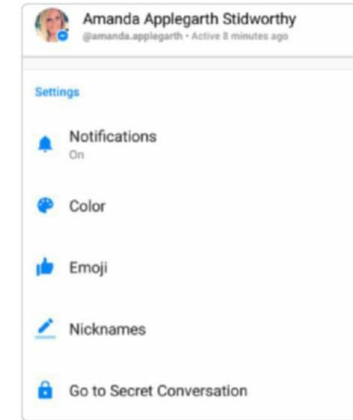
**5** There are various sections, including Active Now and Favourites. These can be hidden using the menu button beside the section title. Tapping any image will open a conversation with that person. You can tap the New Message button at the bottom right and then choose a contact to message.



**6** At the bottom of the Messenger main screen, you will see the main control tabs. These take you to Calls, People (where you find new contacts) and the Information screens. In the middle of the tab bar is a camera button, used for creating your Messenger Day message.



**7** Enter a conversation with someone and you will see a familiar style chat window. The icons at the bottom allow you to, from left to right: Text, Take Photo, Add Photo, Add a Sticker, Add a GIF, Record Voice Message and Add Location. The final icon opens a menu of additional message tools.



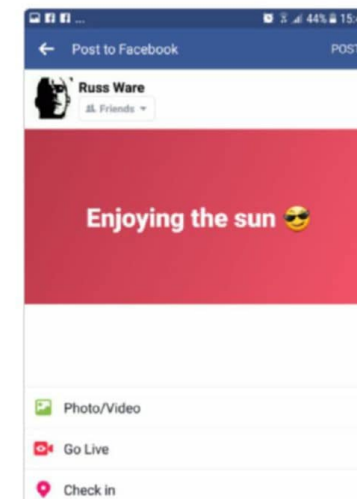
**8** You can customise each of your Messenger contacts and conversations individually. Open an existing conversation and tap the (!) icon at the top right of the screen. Here you can change the colour of the conversation bubbles, add a nickname or disable notifications for that contact.



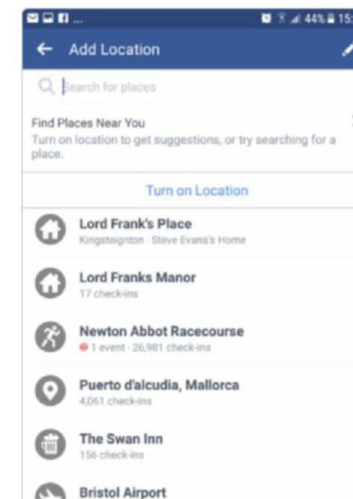
**9** Facebook Messenger adds a clever new feature which the old internal chat system didn't have: Chat Heads. These are small circular profile pics, which float on your screen when a conversation is active. Even if you leave Messenger (and Facebook), the Chat Head remains accessible at a tap.

## Checking In

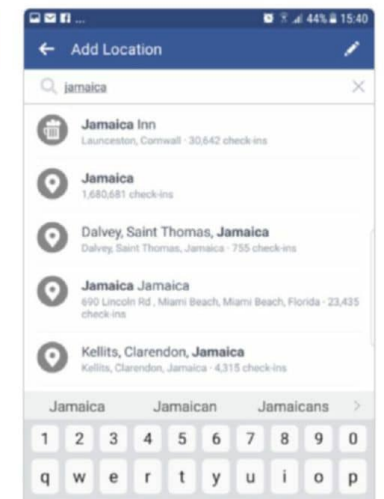
Checking in is a simple way of updating your status to show where you are. Check-in's can either be places you have visited before, or you can create new ones as you need them.



**1** Open the Facebook app and tap the 'What's on your mind?' box at the top of the screen. You can type a status update if you wish, or simply tap the Check-in button below the text box. A list of previous locations available to check in to will then be displayed on screen.



**2** If you see your current location listed, tap it, and then tag any friends you are with (if you wish) on the next screen. You can skip this step using the button at the top of the screen. You now simply need to tap the Post button to update your status with the check-in.



**3** If you don't see your required location in the check-in list, you can add one there and then. Tap the search field at the top of the list and type the name of the location. If it already has a check-in logged (by someone else), tap it. If not, at your home for example, you will be able to enter one.

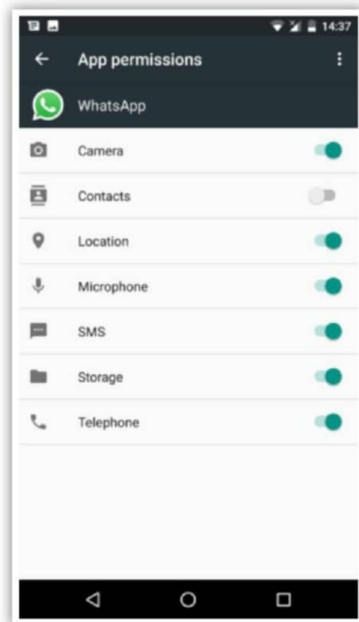


# Get Started with WhatsApp

WhatsApp started as an alternative to SMS but now supports sending and receiving a variety of media, including text, photos, videos, documents and locations, as well as voice calls. WhatsApp messages and calls are secured with end-to-end encryption, meaning that no third party including WhatsApp can read or listen to them. This makes it the perfect choice for your private and personal conversations.

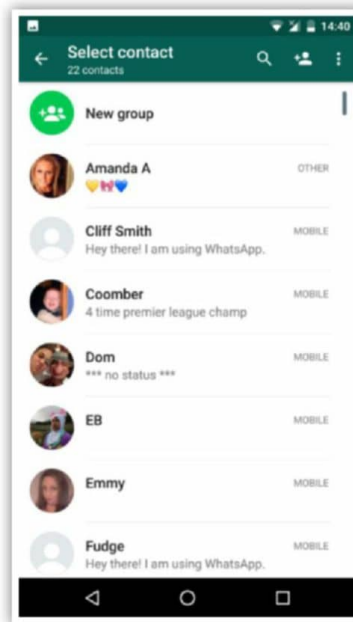
## How to Chat on WhatsApp

WhatsApp is a very popular chat platform and not just because it is secure and private. There are dozens of features to explore but here are the most important tools and functions.



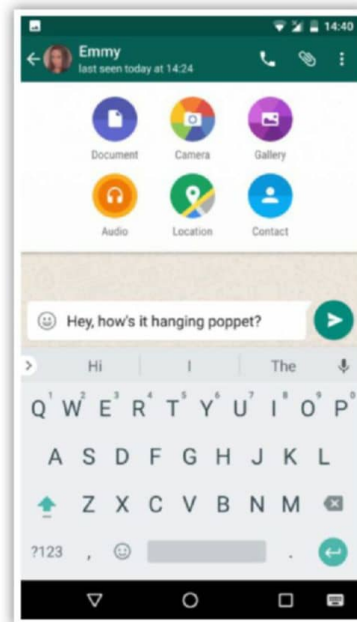
### Adding Contacts

WhatsApp quickly and easily recognises which of your contacts are using WhatsApp by accessing your phone's address book. If you can't see your contacts, make sure you have allowed WhatsApp to access your phone's contacts in your phone's Settings (Settings > Apps > App Permissions).



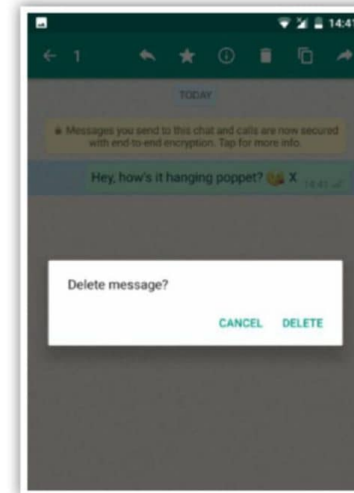
### Start a Chat

Assuming this is a fresh install of WhatsApp, you won't have any conversations listed under the Chats tab. Instead, tap the New Chat button at the bottom right and choose a contact from the list that opens. For a group chat, tap the New Group option at the top and then choose contacts to invite to the chat.



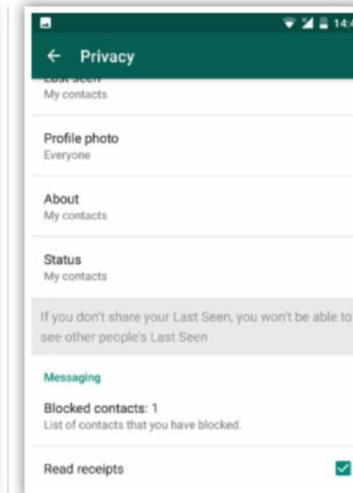
### Chat Tools

During a chat you can use several tools to add content. The smiley face icon in the text box lets you add various emoji and the camera lets you add or take a photo. Tap the paperclip icon at the top to attach a document, photo, recording, location or a contact to a message. Tapping the phone starts a VOIP call.



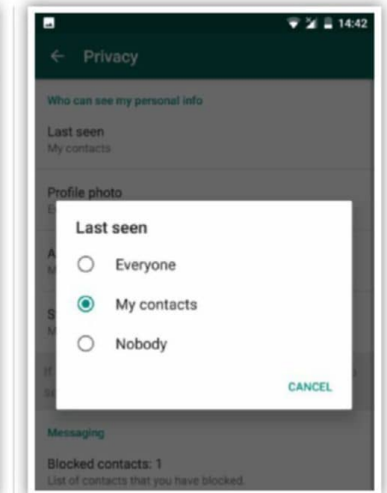
### Deleting Messages

Open WhatsApp and go to the chat containing the message you wish to delete. Tap and hold the message and then tap the Trash can icon on top of the chat screen and select Delete. Optionally, you can tap several messages to delete multiple messages at the same time.



### Blocking Contacts

You can stop receiving WhatsApp messages, calls and status updates from certain contacts by blocking them. Tap the Menu Button > Settings > Account > Privacy > Blocked contacts. Tap the add contact icon and then select the contact you wish to block from the list.

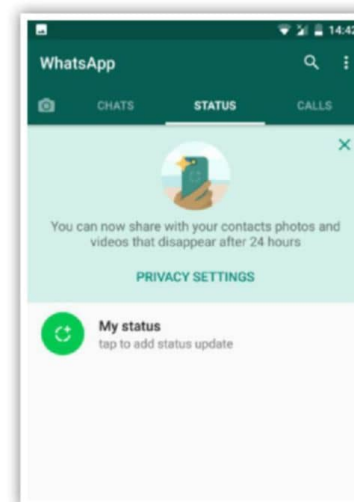


### Privacy Settings

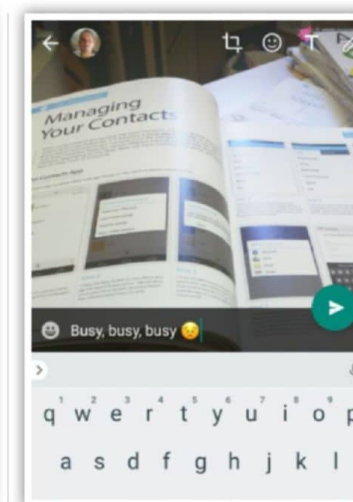
By default, any WhatsApp user can see your read receipts, last seen status, about info and profile photo. Your contacts can also see your status. To change these settings, go to WhatsApp > Menu Button > Settings > Account > Privacy. If you don't share 'Last seen' you won't see it for your contacts.

## Using WhatsApp Status

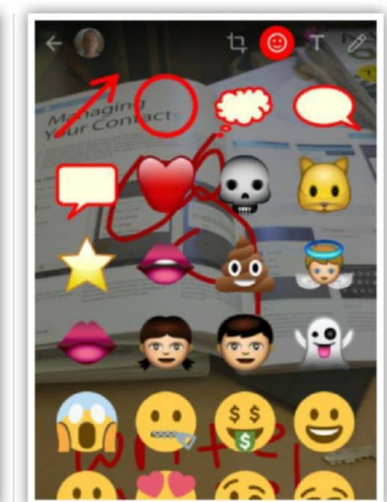
WhatsApp Status allows you to share photos, videos and animated GIFs that disappear after 24 hours. It's a bit like Snapchat Stories but with a WhatsApp twist.



**1** In order to send and receive status updates to and from your contacts, both you and your contacts must have each other's phone numbers saved. To view someone's status update, tap the Status tab and select a contact's status. To reply to one of your contact's status updates, tap Reply at the bottom of the screen.



**2** To add a status update, go to the Status screen and tap the status button at the bottom right. You can take a new photo or record a new video or choose an existing one from the picker, then tap the send button. The camera is fairly basic, only allowing you to add a flash or switch to front camera.



**3** However, you can add a caption and personalise your status updates by adding emojis, text and freehand drawings to your photos and videos. The buttons to add emoji's etc., appear at the top of the screen once you have taken or selected the photo or video you want to send.



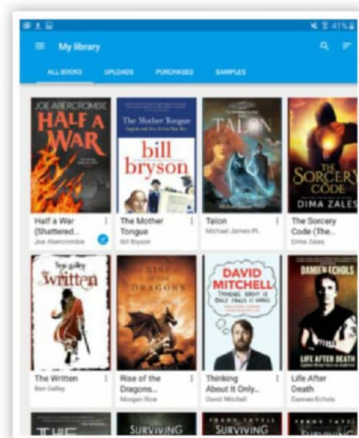


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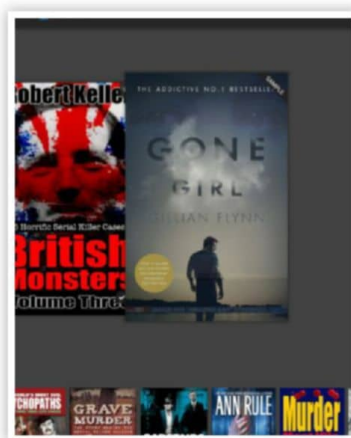
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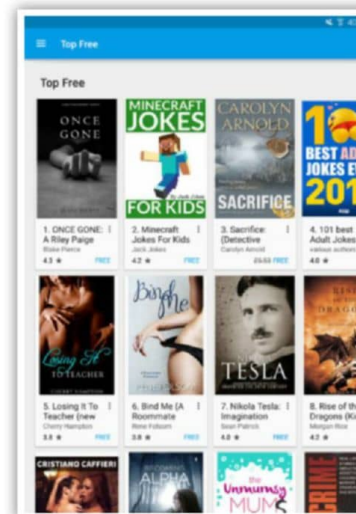
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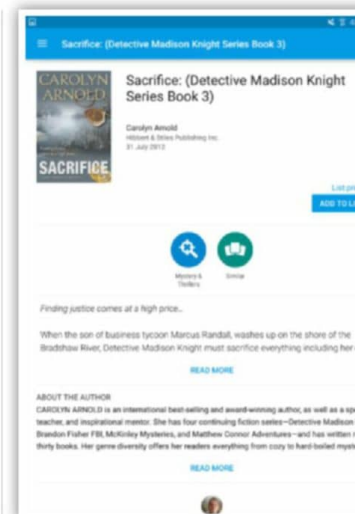


## Finding Free eBooks

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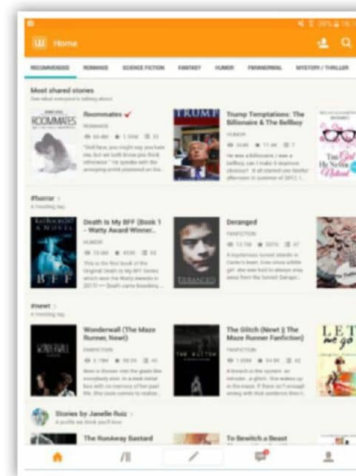
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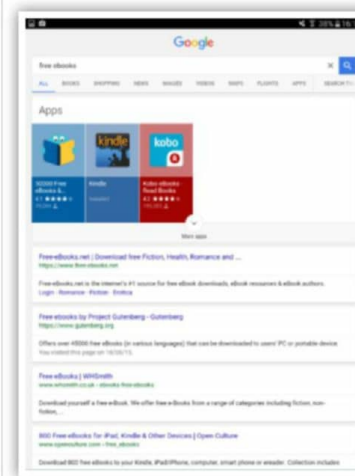
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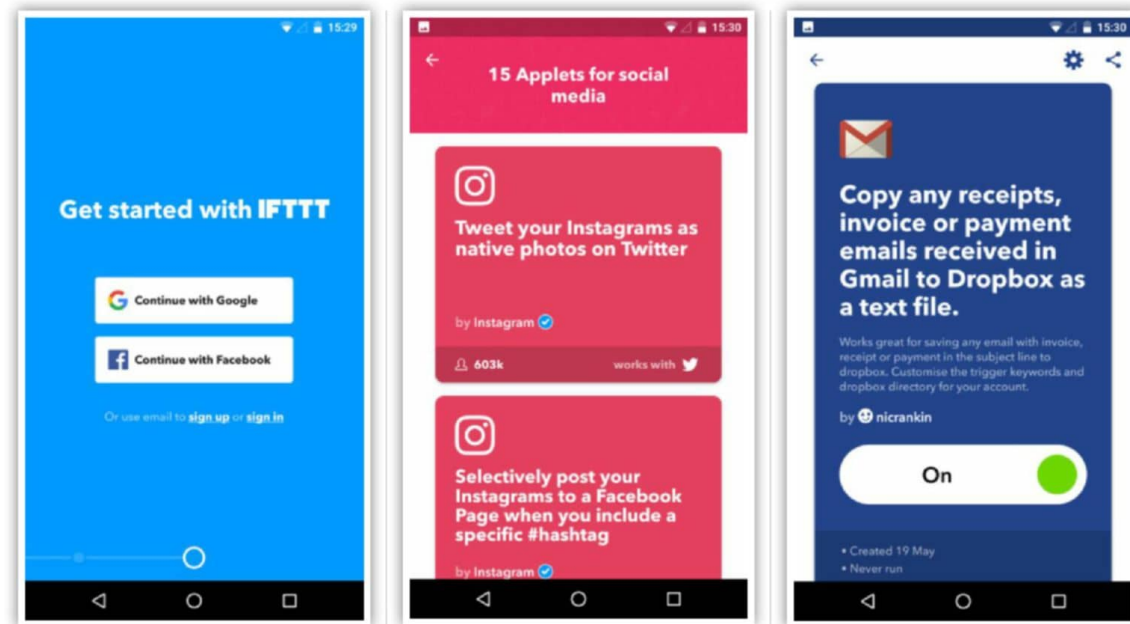


# Automate Your Life with IFTTT

Your smartphone is already a powerful organisational tool, even if you don't have the latest and greatest model in your pocket; but there are ways to make it even more so. IFTTT (If This Then That) is an extremely clever app that allows you to automate app actions by linking them together. This is a lot easier than it sounds, as long as you understand the basics of how IFTTT works.

## Using Applets

In IFTTT, the result of linking two app actions together is called an Applet. There are thousands of applets ready and waiting to be used in IFTTT as soon as it is installed.



**1** Open the IFTTT app and sign in with Google or Facebook. You can also sign up using an email address and use that to sign in if you prefer. If you choose to sign in with Google or Facebook, you will need to grant the app permission to access account details, but this is nothing to worry about.

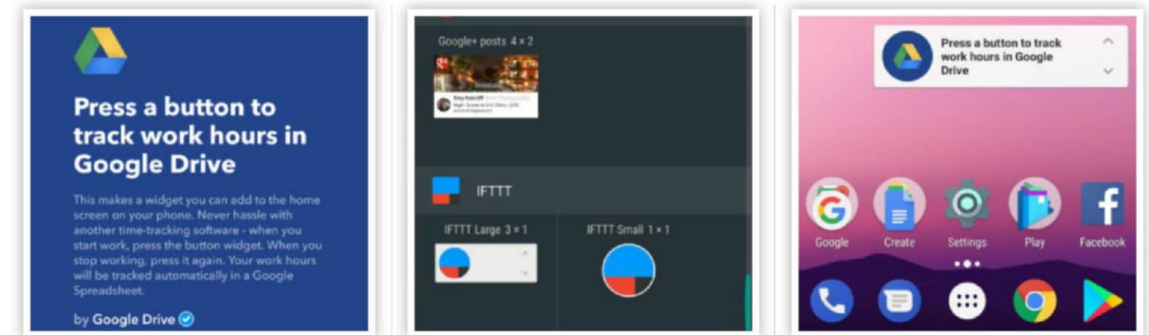
**2** The first screen you see will be the Discover screen. This has a featured applet section at the top (swipe left to scroll through the categories) and a list of individual applets below that you can scroll through. These are some of the most popular or most used applets on IFTTT.

**3** When you are scrolling through the available applets, you will see that they all have a description and all show the logo of the app or service they work with: Google Drive for example. Select an applet and use the switch to activate it. Configure any notification options, if prompted, and tap the check mark.



## Do Button Applets

The Do Button is a widget that lets you activate compatible IFTTT applets from your Home screen, with a single tap. Not all applets will work with the Do Button.



### Choose Applets

Have a look through the applets and you will see some that have a button icon as well as the app icon. These are applets that will work with the Do Button (and another app). You can activate more than one Do Button applet at a time and scroll through them in the home screen widget.

### Add the Button

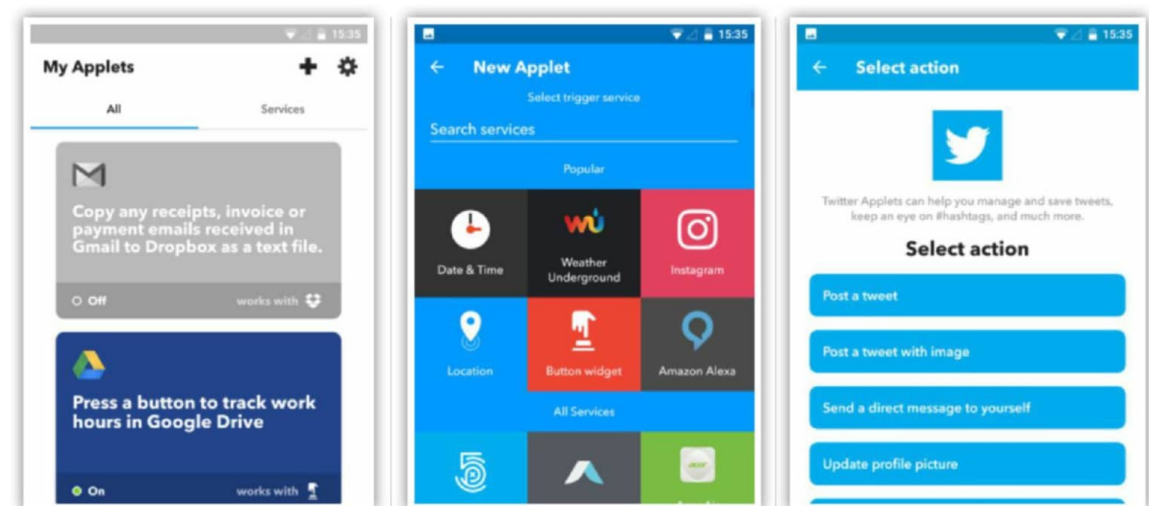
and a larger one that allows you to scroll through multiple applets. Add either to the home screen in the usual way and then tap the button. If using the single button, you will need to choose the applet.

### Do Applet Example

A very cool example of a Do Button applet is 'Press a button to track work hours'. When the button is pressed, this will add a time/date entry into a spreadsheet, allowing you to record when you start and finish tasks or jobs. The app will even create the spreadsheet for the entries to be added to.

## Custom IFTTT Applets

There are thousands of ready-made applets available to use but if you can't find the one you need, you can make a custom applet for yourself (and others) to use.



**1** Open the IFTTT app and tap the My Applets tab at the bottom. Here, any active applets are displayed. Tap the + button at the top of the My Applets screen to begin building your own. Next, tap the + button next to the word "this" on the applet builder screen.

**2** All Applets either have triggers (this) or actions (that) but not all have both triggers and actions. As an example, a trigger could be a particular location, a time or date, or an update from an app. Each trigger that is shown can have multiple options, so tap on any to see how it can be refined.

**3** Once you have chosen your trigger, you can choose an action. The actions available will vary depending on the trigger you chose. Actions could be something like sending an email or a notification, or even controlling a smart thermostat like the Nest device.



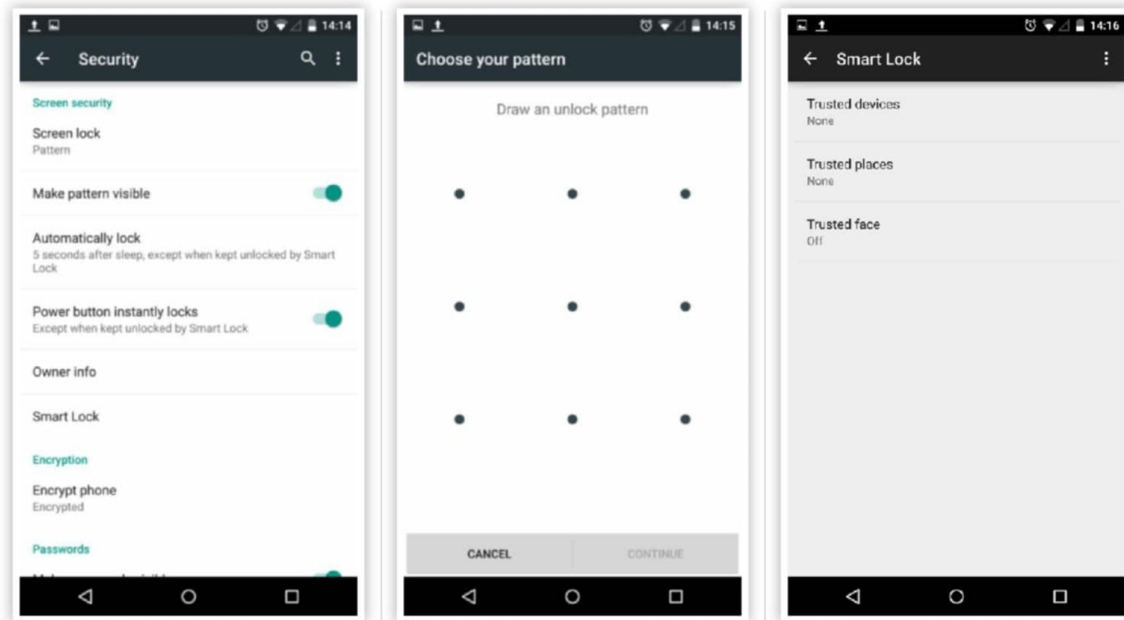


# Android Security Tools

Android has always included lots of security settings and tools, from screen locks to SIM card encryption. The Lollipop update has further enhanced device security by introducing Smart Lock, Trusted Agents and Screen Pinning, as well as Guest accounts. As you begin to add more and more personal data to your Android device, you should focus more on these security tools and features.

## Activate Smart Lock

Smart Lock is a new addition to Android, which allows the use of several further locking and security options. Without enabling Smart Lock first, you will not be able to use many of these tools.



**1** As mentioned, Android features lots of different security settings. All of the system security settings are accessed in Settings > Security. Scroll to the bottom of the Security settings and you will see Trust Agents under the advanced heading. This is where you enable Smart Lock.

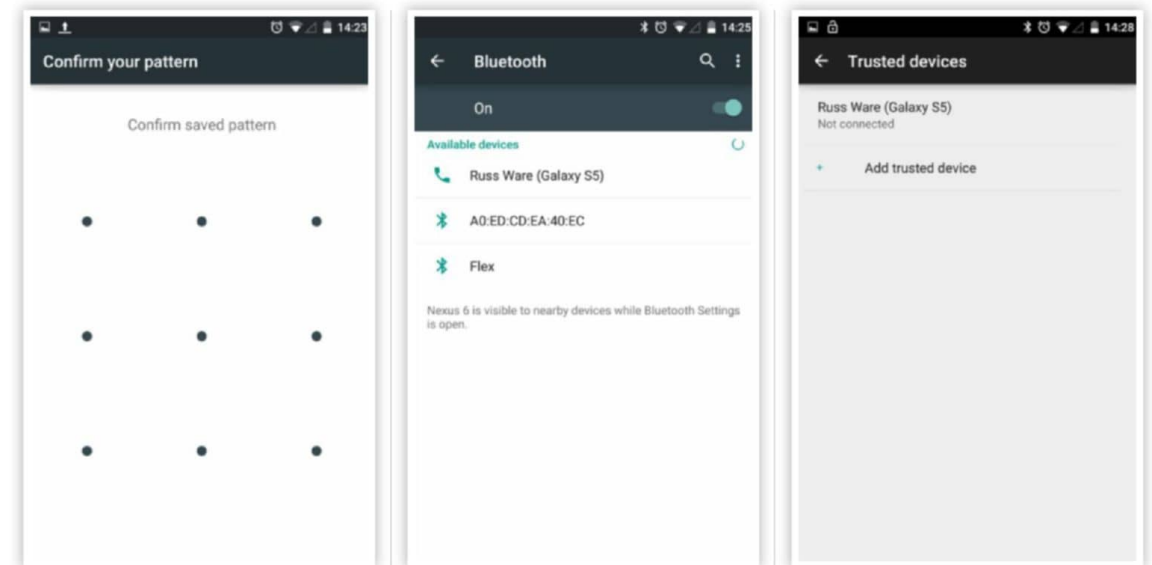
**2** Before you can use Smart Lock, you will need to set up a screen lock on your device. Your choice of screen lock must be Pattern, PIN or Password to use Smart Lock. You can read more about setting up a screen lock elsewhere in this magazine.

**3** You need to enter your screen lock code when you want to change your Smart Lock settings. If you've turned off Smart Lock in the past, turn on now. In the Security menu under Advanced, tap Trust Agents and make sure that Smart Lock is set to On.



## Trusted Devices and Places

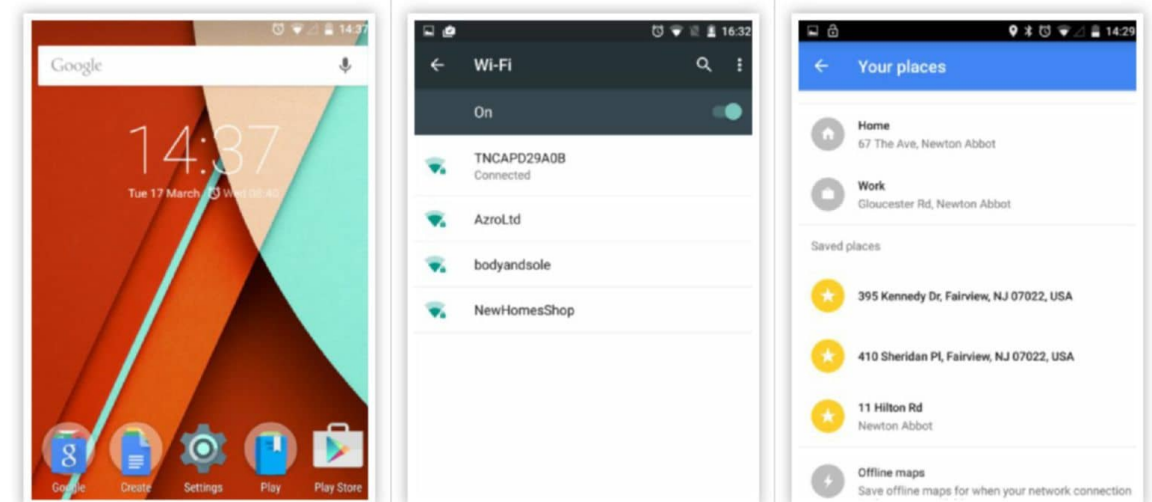
With Smart Lock turned on, you can now start to add those devices, places or even faces that you trust.



**1** To set up a trusted device or trusted place so that your device will automatically unlock, open your device's Settings menu > Personal > Security and tap Smart Lock. Enter your pattern, PIN or password on the next screen.

**2** You can choose a trusted device, such as a Bluetooth watch, fitness tracker, or Bluetooth headset, to keep your phone unlocked whenever that device is connected. You have to pair your Bluetooth device before you can make it a trusted device.

**3** On your phone or tablet, make sure that Bluetooth is turned on. In the Smart Lock menu, tap Trusted Devices. Tap the Add icon, and then choose Bluetooth. Touch a device to select it from the list of connected devices. Only paired devices will show in this list.



**4** When your device is connected to the Bluetooth device, it will automatically unlock. To remove a trusted Bluetooth device, select it from the list of trusted Smart Lock options in the Trusted Devices menu.

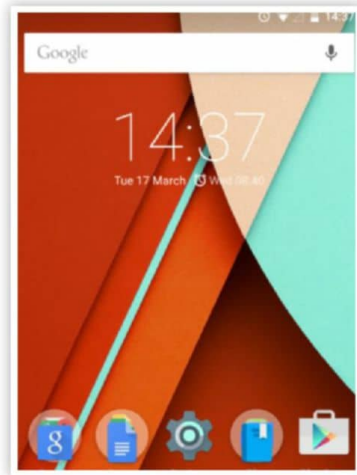
**5** To add your home or workplace as a trusted location, in the Smart Lock menu, touch Trusted Places. Move the switch next to Home or Work to the On position. You need to have an Internet connection and allow your phone to use your location for your trusted places to work.

**6** To edit your home or workplace, open the Google Maps app on your device and sign in. Tap the Menu button, then select Settings > Edit Home or Work. Update the information and tap the tick mark. To remove or edit a customised place, move the switch to the Off position.

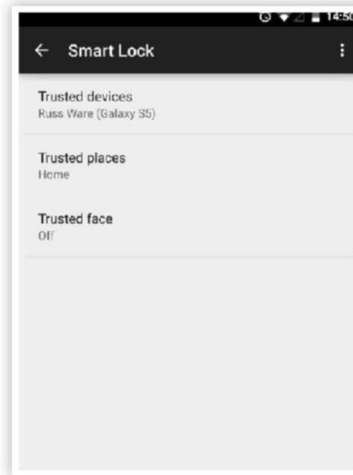


## Trusted Faces

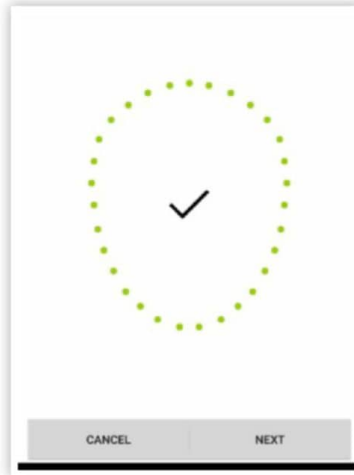
Although contained in the same menu, Trusted Faces works differently to Trusted Places or Devices.



**1** You can have your device unlock when it recognises your face. After setting a trusted face, every time you turn on your device, it will search for your face and unlock if it recognises you. The data used to recognise your face is only stored on your device.



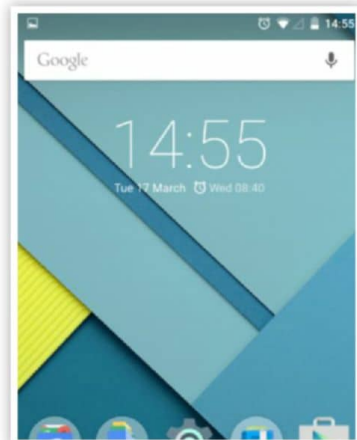
**2** To set a Trusted Face, open your device's Settings menu. Open the Security menu and, under Screen Security, tap Smart Lock. Enter your pattern, PIN, or password. Tap Trusted Face, read the disclaimer message and then tap Set it Up.



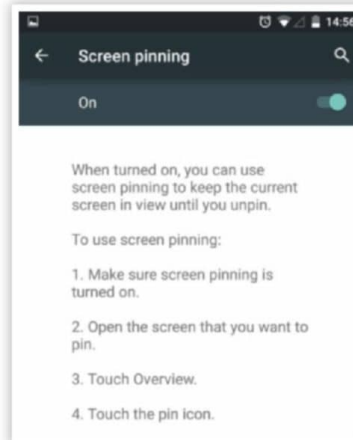
**3** Face Unlock captures an image of your face during setup, which is then used as a template to match to when trying to unlock using Trusted Face. With this in mind, it is best to set this feature up whilst indoors, in a well lit room. Follow the instructions to complete setup.

## Screen Pinning

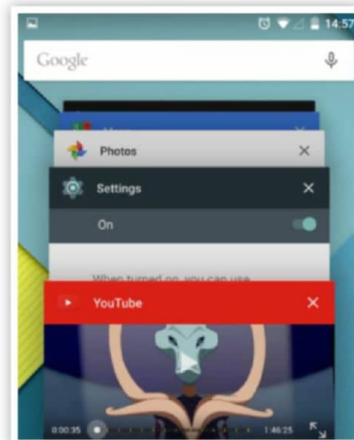
Although part of Android 5.0, Screen Pinning might not be available on all devices running the OS.



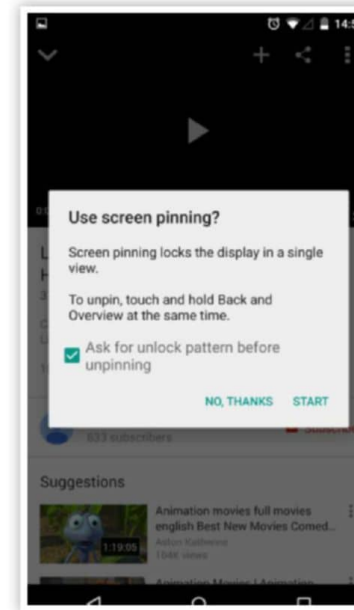
**1** Screen Pinning enables you to lock your device on a specific app or screen. This is useful when allowing someone to watch a movie, for example, without allowing them access to anything else on the device. It's perfect for when you're sharing your device with children.



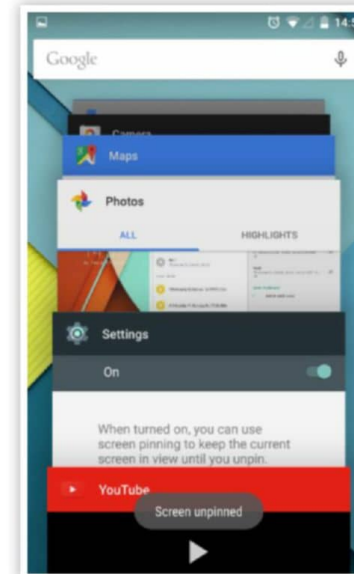
**2** To enable Screen Pinning, open Settings > Security, and look in the Advanced section. Tap Screen Pinning and use the slider to turn the feature On. If you can't find the Screen Pinning option in the Security menu, check whether the feature is available with your device.



**3** Now open an app and go to the screen you want to pin. Tap the Overview button (you might know it as the Recent Apps button) on your device. Swipe up to reveal the pin icon on the bottom-right corner of your selected screen. Tap the pin icon.



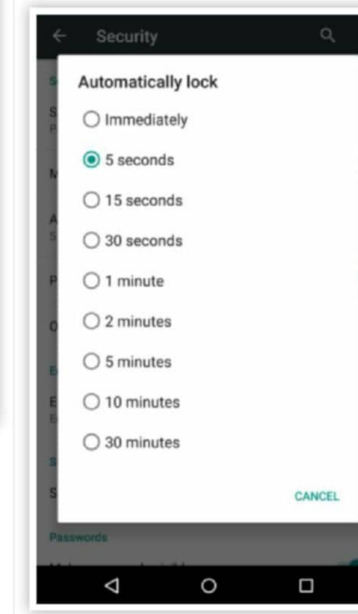
**4** If you want the lock screen to appear after an app is unpinned, check the box next to Ask for Unlock Pattern Before Unpinning. Finally, tap Start to pin the screen. You can now hand the device over to someone else, knowing that they can't snoop around.



**5** To unpin the screen, tap and hold Overview and Back at the same time. Release both buttons and the screen will be unpinned. If you required that the lock screen show after an app is unpinned, you will need to enter your pattern, PIN, or password to finish.

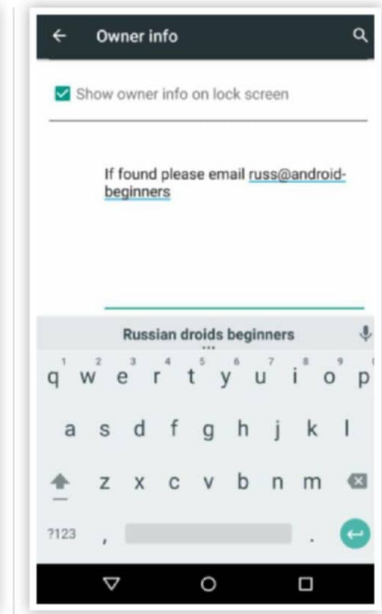
## Little Used Security Tricks

Adding a screen lock is a must, as is using Guest accounts if you let someone borrow your device. But there are several other simple security features which many users overlook.



### Automatic Lock

This setting means that once your phone screen is turned off, the screen lock you have set up is instantly applied. It can be set to 5, 15 or 30 seconds, but this will make your device vulnerable if you put it down after turning off the screen.

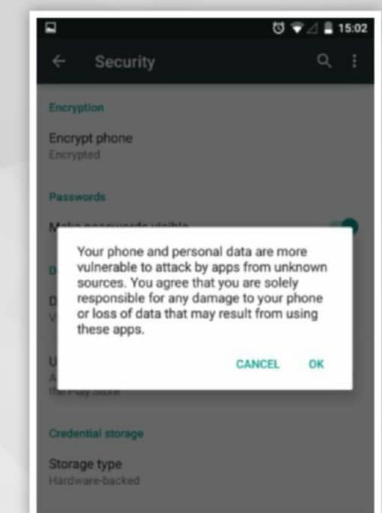


### Owner Information

The Owner Information option allows you to write a message which will appear on the lock screen. This allows you to give anyone finding your lost device a phone number or other contact detail, without them needing the device to be unlocked.

## Verify App Downloads

If you choose to allow the installation of apps from unknown sources and install from sources other than Google Play, it's more likely that these apps could harm you or your device. If you allow the installation of apps from unknown sources, the Verify Apps feature protects you by continually checking your device to make sure that all apps are behaving in a safe manner, even after they've been downloaded.







# Boosting Android Performance

Remember when you first used your new Android phone or tablet and it ran quickly and smoothly? If you have had your device for more than 6 months, it's a fair bet that it isn't running so well any more. Luckily, there are several simple ways to improve the performance of any Android device, particularly those running newer versions of the OS. By applying some or all of these simple tips you could see a decent boost in stability, frame rate and smoothness.

## Choose Widgets Carefully

Widgets are a key part of what makes Android so usable but it is very easy to fill several home screen panels with the ones you find useful. Doing so will almost certainly impact on the running of your device, as each widget uses small amounts of processing power (not to mention battery power).

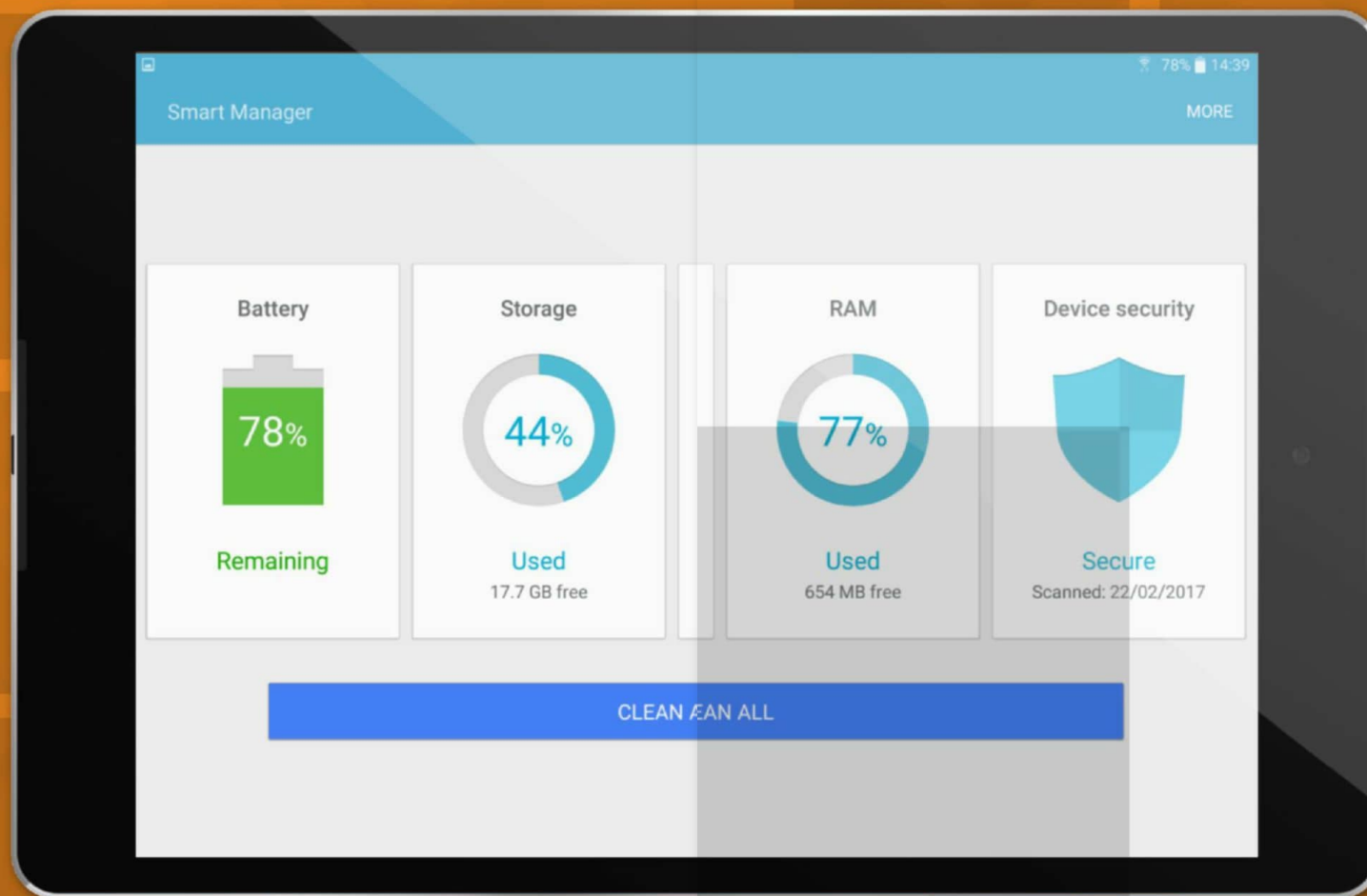
Clearing some of these widgets off your home screens will, in many cases, give you a noticeable improvement in performance. You don't need to strip your home screens back to nothing, just remove those widgets you rarely use or which don't increase usability that much.

## Use Device Maintenance

Many devices, including most current Samsung Galaxy phones and tablets, feature a built-in device maintenance tool. These provide a one-click way to clear out old files left behind by apps, clear the cache, scan and clean storage and force apps that are using up device memory to close. You don't need to use these tools every day but a few minutes each week spent using them can make a huge difference, particularly if you install and remove lots of different apps.

## Clear the Cache

The more you use an app, the more data is cached to improve that app's performance. Unfortunately, what is good for the app, may not be good for the rest of the device. Deleting the individual caches can be done in the Apps menu (settings > applications) but there are also free apps available in the Google Play store that can automate the process. One of the most popular is Clean Master.



## Turn Off Animations

A hidden settings option in Android will give you access to commands you may have never known existed: the Developer Options. Go to Settings > About, scroll down to Build Number and tap it seven times. You will now have access to developer options. Most of the options here should be left alone unless you really know what you are doing but some, including the animation options, can be altered for a potential speed increase. Try turning off animation settings one at a time to see if things speed up on your device.

## Switch to ART Runtime

Your device might also support the ART runtime environment. If so, switching to it from the DALVIK runtime could provide a considerable performance boost. ART is now a standard feature for all Android versions, and newer devices will likely already be using it. Just as with animation options, you can access this setting via the Developer Options menu. Not all apps can use ART at the moment, so if one of the apps you use is unable to open or you are having trouble receiving a software update, simply switch back to Dalvik mode using the same process.

## Clear Out Some Apps

Most apps take up just a few MB of space in your device memory, so most modern Android phones and tablets can handle a lot of apps before they start to run out of space. However, just because you can fit loads on your device, doesn't mean that you should. Having periodic clear outs of apps you no longer need can really help to improve device performance, particularly if the apps you remove are ones which update or work in the background. To uninstall apps easily, open the main app list (or app drawer) on your device and tap and hold on the one to be removed. Drag and drop it on to the trash can (or uninstall) icon at the top of the screen.

## Keep the OS Updated

Make sure that your Android device is up to date with the latest system software releases. Major and minor software updates could include improvements to how the processor handles various functions, and could result in a decent speed boost.

You can check for updates by opening the main settings, tapping About and then looking for the Software Update section. You can manually check for updates using the button there, or you can check the box next to 'Automatically check for updates'.

## Factory Reset

If your device has become cluttered up with apps, files and other stuff and is showing signs of struggling to do anything, it could be time for a Factory Reset (also called a hard reset). This is just about the best way to achieve a performance boost, particularly with older handsets.

Factory reset is not a step to be taken lightly. It will permanently delete all your data and customised settings and will also remove any applications you downloaded and installed. Be sure to back up any data and files you want to keep. Factory reset will not remove the data and files that are on your microSD card.

The simplest way to perform a factory reset is through the settings menu. Go to Settings > SD and device Storage (or Privacy) > Factory Data Reset. On newer versions of Android, backup and reset has its own section in the main Android settings. On the following screen select Reset Device or Factory Reset. Once the device has restarted, you will need to enter your Google account details, etc. so make sure you know them and have them to hand.

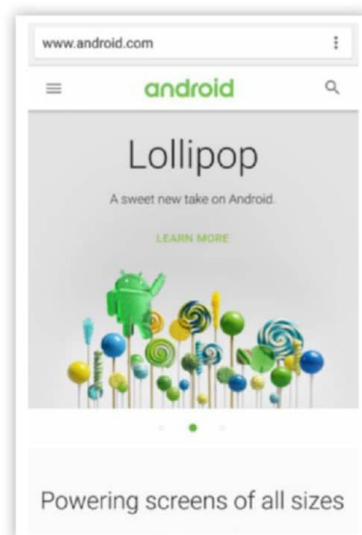


# Reducing the Data You Use

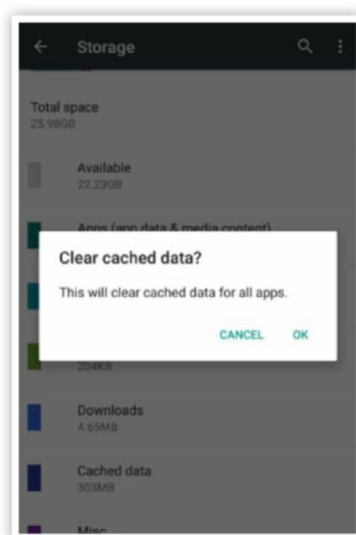
More and more Android features and applications demand access to a mobile data network, and mobile data costs money. Mobile data is either charged per MB of use, or included as part of your monthly data plan. Even if a certain amount of data is included within your plan, there is usually a limit (unlimited data plans are increasingly a thing of the past), and if you go beyond it the charges start to mount up.

## Maintain Your Cache

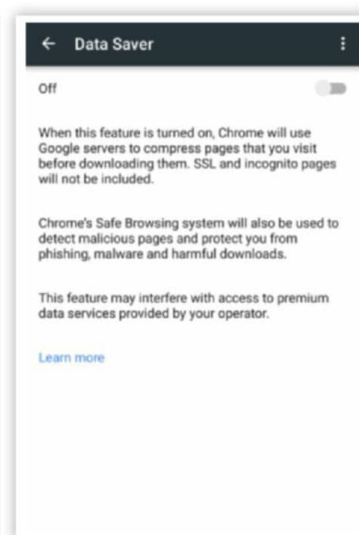
There is an argument for emptying the browser cache (and the cache of other apps) to help keep your Android device running smoothly.



**1** ▶ The cache is a component that stores data ready for use. When that data is requested again, by the browser for example, having it in the cache means that it can be provided faster and without requiring it to be fetched from the web server where it was originally held.



**2** ▶ Emptying the cache will free up internal memory space on the device and help the whole system run slightly better. However, if you are trying to reduce data usage, leaving the browser cache intact has obvious benefits.



**3** ▶ If the browser does not have to fetch images and other components from regularly used websites, it does not have to use so much of your data allowance. Task managers and cleaning utilities often clean the cache, so if you have one installed, add your browser to the exclude list.

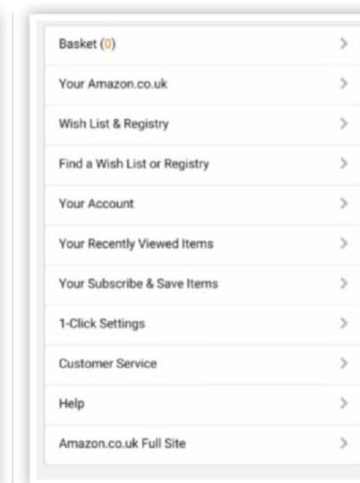
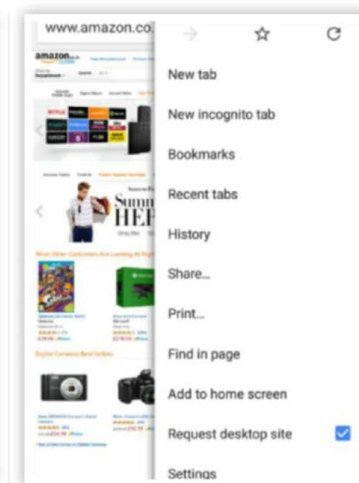
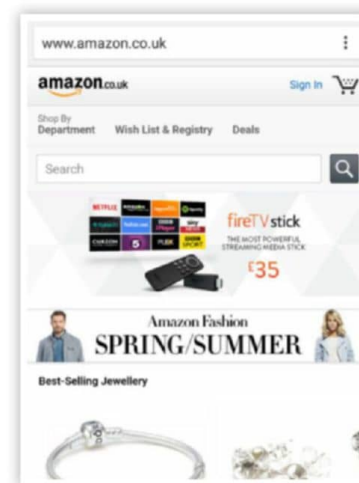
## What is Mobile Data

▶ Mobile data is information sent over the mobile network, rather than over a Wi-Fi network. Data networks use 3G and 4G.



## Choose the Mobile Version

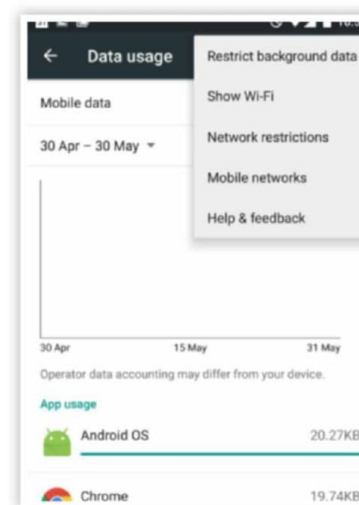
Increasingly, websites have both full and mobile versions available. This is particularly true of large, popular websites such as Amazon and eBay.



**1** ▶ Many websites will automatically display the mobile version, but some will give you the option to choose. The mobile version of a website is designed to be quicker to load and use less data to do so. Therefore it makes sense to choose the mobile version if you are trying to conserve data usage.

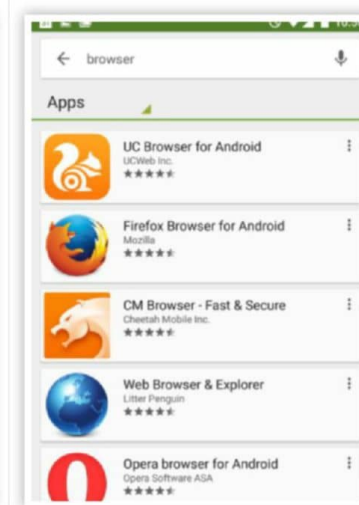
**2** ▶ Aside from the difference in layout and content, you can normally tell if a website is running the mobile version by the "m" in the URL (some websites will display "mobile" or "mobileweb" instead). If you can't see the URL field, drag the page down slightly to see it.

**3** ▶ You can also check by scrolling to the bottom of the page and look to see if there is a link to the Full or Mobile version. Stick to the mobile version whenever possible and your data usage will be reduced.



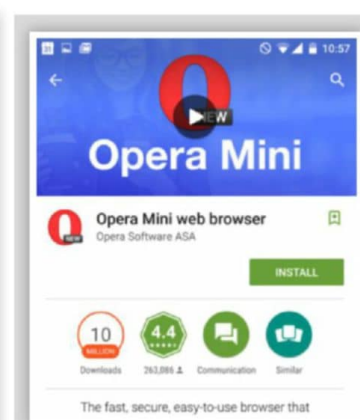
## Restrict Background Data

▶ If you restrict background mobile data, some apps and services may not work, unless you are connected to a Wi-Fi network. However, the normal device functions will continue and you will hopefully reduce the amount of data being used by those background services.



## Get a New Browser

▶ The basic browser on your Android device is probably Chrome, and it's very good at making the most of data. However, there are many other browsers to choose from, and some are specifically designed to use less data by showing only text or by offering page compression, like Opera Mini.



## Opera Mini Browser

▶ With Opera Mini, turning on Opera Turbo compresses data by up to 80%, or leave Opera Turbo off to get full website data, as you would on a PC. Opera's speed and efficient controls put it ahead of many other comparable browsers. Surf the web on your mobile device as easily as on a desktop computer, and reduce data costs with the unique compression technology.



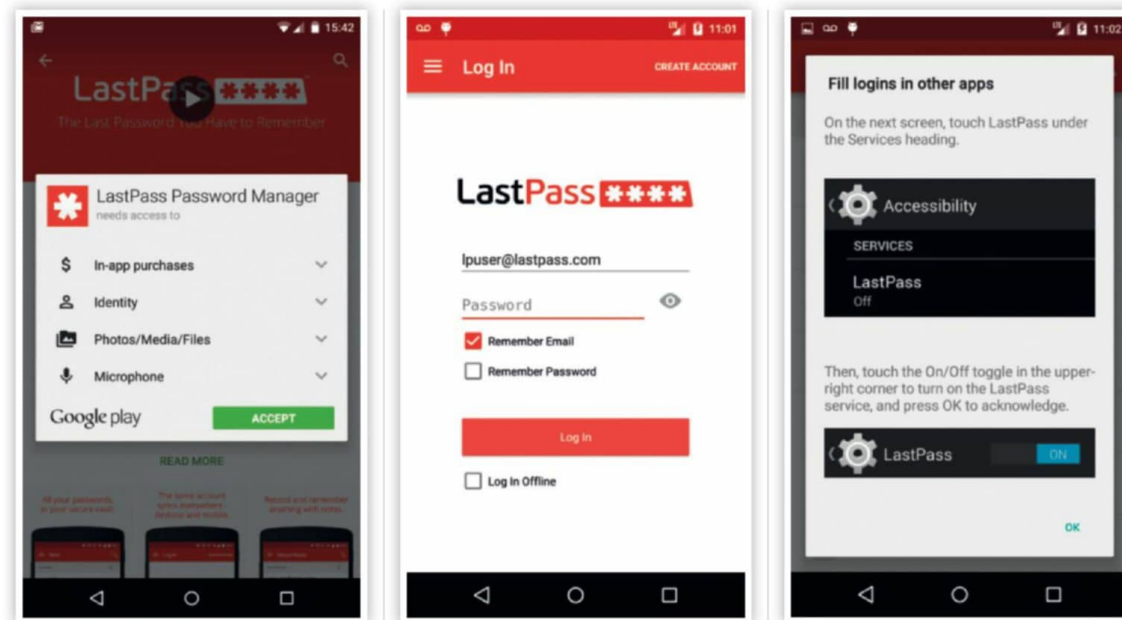


# Manage Multiple Passwords

Password security has never been more important than it is today. We can manage everything from our business website to our bank balance online, and to do so we need passwords. A great bit of password security advice is to avoid using the same password for multiple accounts, but this also may mean keeping track of anything from five to 25 different passwords. LastPass, one of the best-known password managers around, solves that problem.

## Never Forget Your Login

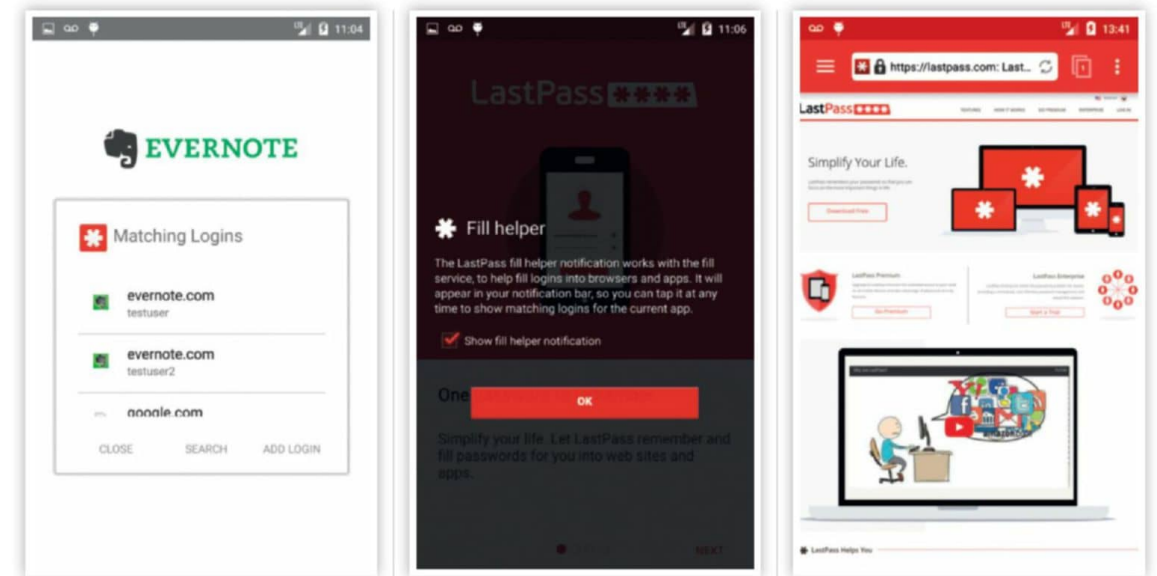
You almost certainly have dormant or inaccessible accounts littering the Internet, all because you have forgotten the login details.



**1** To install, open Google Play Store on your phone or tablet and search for LastPass. If you would like to attempt a manual installation, you can download the Android app file (apk) from <https://lastpass.com/lpandroid.apk>. LastPass will only work properly for apps on devices running Android 4.1 and later. If you want to fill in forms in Chrome, version 4.3 is needed.

**2** You will then need to create a new account. Enter your email address first, and then choose your master password. This is the password which gets you into LastPass, and controls access to all of your other passwords and form information, so make sure it is strong but memorable. Confirm and choose a reminder.

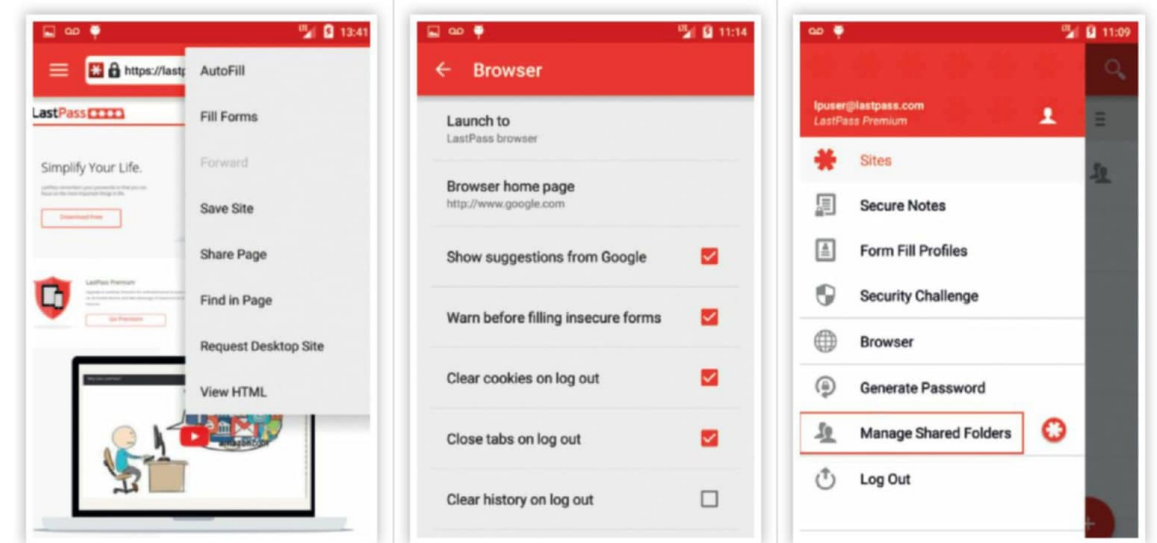
**3** If you would like LastPass to be able to fill in logins in other Android apps, you should activate the feature now. You will be taken to the Accessibility settings on your device and will see a new addition. Tap LastPass and use the slider to enable the function. You can set this up later if you wish. Tap Back to return to LastPass.



**4** To fill an app, just tap on it to launch from your home screen, and LastPass will offer to fill in the details for you. To fill in Chrome, you will need to launch your Chrome browser from your home screen and then navigate to a site. Tapping on the Username or Password field will engage the autofill feature.

**5** After installing LastPass, you will have the option to enable the Fill Helper. The Fill Helper is great for pages and apps where the App Fill Window is not allowed to pop-up automatically. Select the options and apps you would like the Fill Helper to appear on. You can also change these settings later in Settings > App Fill.

**6** LastPass for Android features a built-in browser that will automatically fill your login information for each of your saved LastPass sites. Once you have installed the LastPass Android app, tap the App icon to launch the login page. Tapping the button in the upper-left of this screen gives you access to the Vault options screen.



**7** When LastPass detects that you are entering a password for a site that is not already stored in your LastPass Vault, or creating a new login on a new site, it will pop-up the Generator icon to assist you. Use the slider to change the password length, and tap the Copy icon to copy the current password shown. Tap Save to finish.

**8** Once the app is up and running, it's time to check some settings. Lock LastPass Automatically will allow you to set when LastPass will lock itself if sent to the background or if the screen is turned off. Accessing LastPass again will require either your master password or a PIN code. The sub-options allow you to set a PIN code and modify the Reprompt Timer.

**9** Shared Folders are available for both LastPass Premium and LastPass Enterprise users. You can open the Manage Shared Folders feature from the Vault Menu. From there you can tap on the Plus (Floating Action button) to instantly create a new Shared Folder. You can also add or remove users from the Shared Folders.

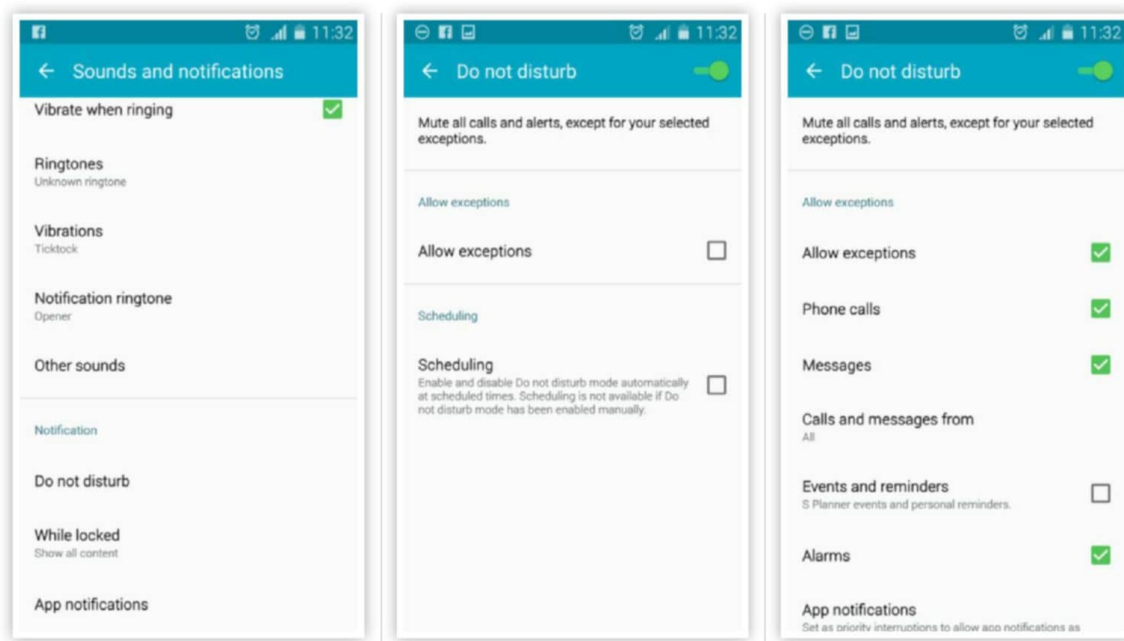


# Control Unwanted Interruptions

Recent Android updates have introduced and improved a feature called Interruptions, allowing users to control when they are disturbed, and what apps or services can disturb them. The update on Samsung Galaxy handles things slightly differently, using a mode called Do Not Disturb. They both work in a similar way but setting them up differs on various devices.

## Do Not Disturb

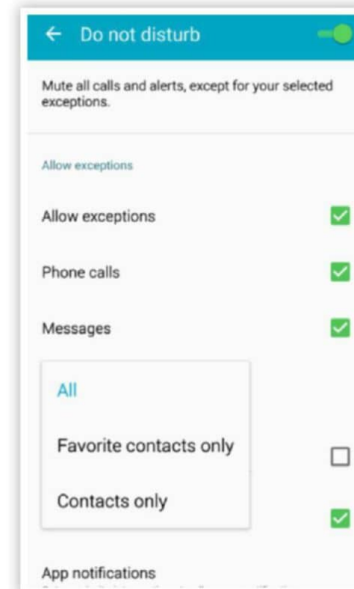
In the Vanilla version of Lollipop, Interruptions can be controlled using the Volume buttons but on a Galaxy device, you will have to go into settings.



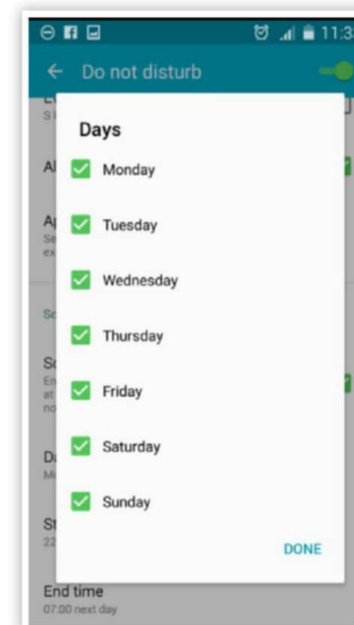
**1** ▶ Open the main settings app and head into Quick Settings > Sounds and Notifications. Scroll down to the bottom of the page and you will either see Interruptions or Do Not Disturb, depending on whether you have a patched version of Android 5.0 or not.

**2** ▶ Tap the slider to turn on Do Not Disturb mode. All calls, alerts and notifications are now muted. You will not hear a chime, see a flashing LED or notice your screen wake up when you receive any communications.

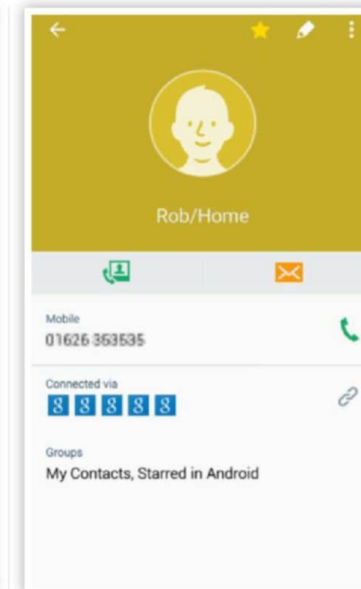
**3** ▶ If you want to allow some notifications or alerts, but still mute others, you can do so by tapping the Exceptions check box. When you do this, a long list of possible exceptions will appear below the box. These include phone calls, messages, events and alarms.



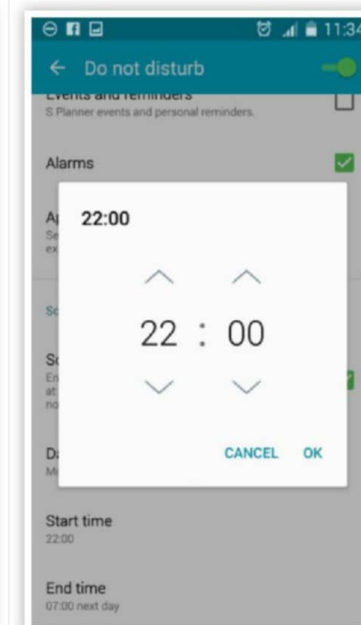
**4** ▶ Tap the check box next to any of these features if you wish to unmute them. If you choose either Calls or Messages, a secondary option, Calls and Messages From will become available. This allows you to choose specific people to unmute, rather than all contacts.



**6** ▶ If you want to mute calls, messages and other alerts, but only at specific times such as when you have your morning meeting with the boss or when you go to sleep, you can do so with the Scheduling option.



**5** ▶ You can allow all calls and messages, those from your favourite contacts or those from all contacts. To make a contact a favourite, you will have to open the contacts app, scroll to the contact and tap the star icon at the top of the info screen.

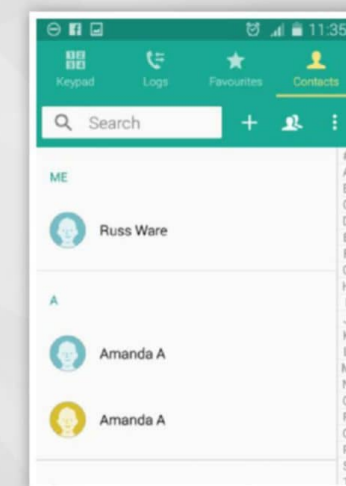


**7** ▶ Tap the Scheduling check box and secondary options will appear. You can now choose which days Do Not Disturb is enabled, the start time (22:00 for example) and the time when the mode is turned off. This can be anything up to 23 hours later.

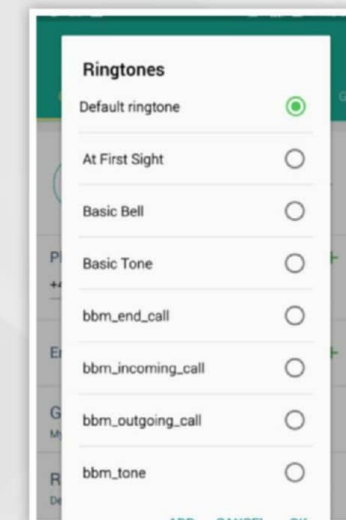


## Screening Calls

Rather than mute calls, you can use your contacts settings to easily screen calls based on the ringtone.



**1** ▶ The standard setting is that all ringtones for all contacts are the same. This will default to whatever you choose as the main ringtone for your device in the Sounds settings. To assign a different ringtone to a contact, open the contacts app.



**2** ▶ Scroll to the contact and open their information screen. Tap the edit icon and scroll down to the Ringtone option. Here you can choose a different ringtone for each contact. You could, for example, set a different ringtone for all family members.



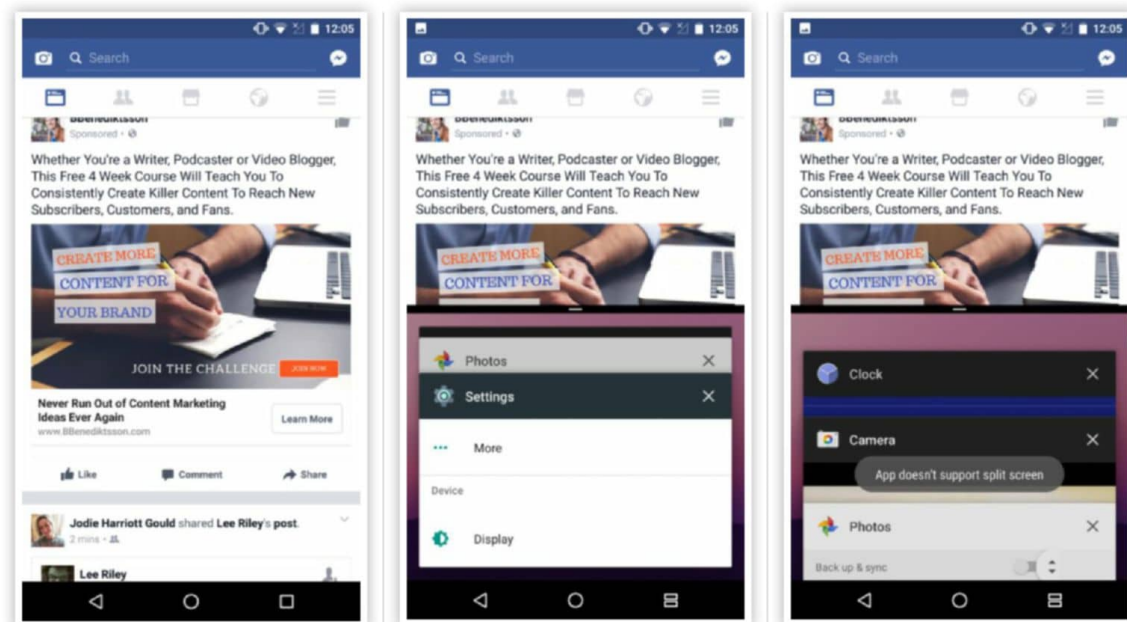


# How to Use Multi-window

The update to Android 7.0 (Nougat) adds support for displaying more than one app on the screen at the same time. On handheld devices, such as phones or tablets, two apps can run side-by-side or one above the other in split-screen mode. On Android TV devices, apps can use picture-in-picture mode to continue video playback while users are interacting with another app.

## Launching Multi-window

It seems that most apps can be viewed in multi-window mode but you may find some force full screen (including many games) so this feature won't work.



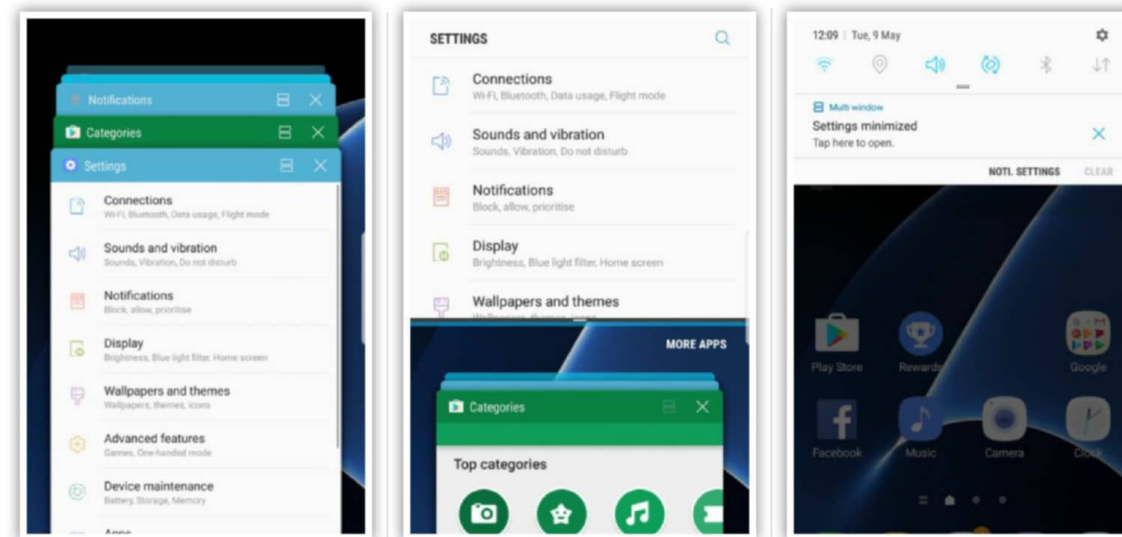
**1** Open the first app you want to view on your phone or tablet. This will obviously fill the whole screen as usual. In our case we have opened Facebook but almost any non-game app will work with multi-window mode in Android Nougat.

**2** Now tap and hold the Recent Apps button, the square icon, previously known as the multitasking button. You will see that the it changes to two smaller rectangles and the screen splits. The first app open will move to the top and the bottom will show recent apps.

**3** You can then select the app to fill the bottom half of the screen from recent apps. If an app doesn't support split-screen, a message will appear on the thumbnail. You can change the ratio of the split by touching and holding on the white line in the divider and moving up and down.

## Multi-window on Samsung

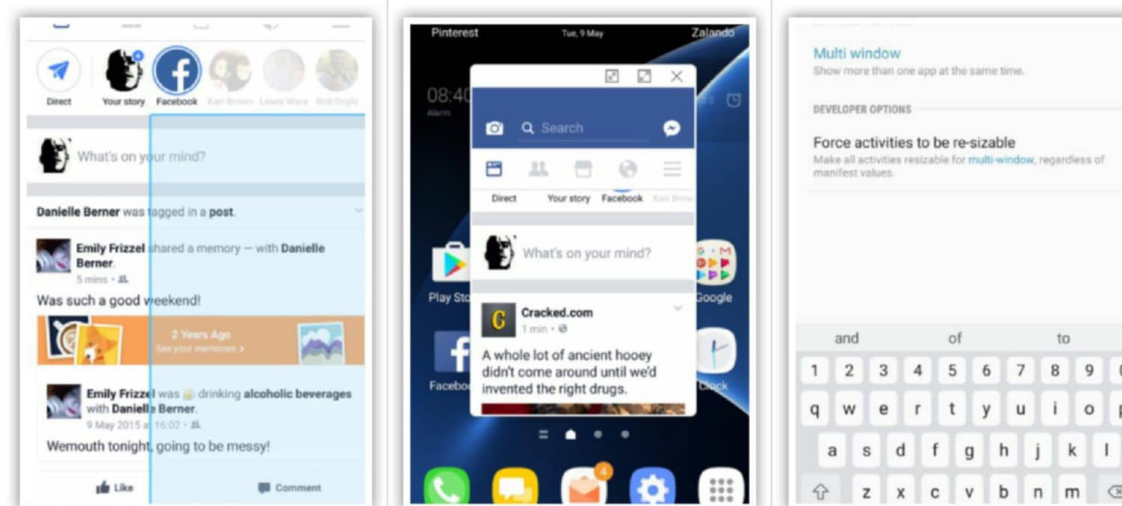
Multi-window mode on Samsung devices has been available for some time and works very slightly differently to most other devices, even after updating to Nougat.



**1** On your Samsung device, tap the Recents button to view the thumbnails of recently opened apps. On the top bar of each app thumbnail is a multi-window icon. Tap this to open the first app in the top half of the screen. You will see that the bottom half still shows Recent Apps.

**2** You can then tap the thumbnail to open an app in the bottom half of the screen. To change the ratio of the split, touch and hold on the dividing line and drag it up and down. If you drag the divider all the way up or down, you will drop out of multi-window back in to single window mode.

**3** If you leave multi-window mode by pressing the home button, it will stay active. A notification in the status bar will display the multi-window icon, and tapping it will switch back to the split screen view. You can cancel the split screen by tapping the X in the notification.



**4** You can also open an application in a pop-up window on some Samsung devices. To open an application in a pop-up window, open the application, touch a top corner of the screen and swipe diagonally towards the centre of the screen.

**5** Touch and drag the blue outline to resize the pop-up. Touch and drag the control dot at the top of the pop-up window to move it around the screen. You can tap the arrow controls at the top of the box to change back to full screen or shrink the window down to app icon size.

**6** If you search for multi-window in the settings on your Samsung Galaxy, you will find that there are a few options for the split screen mode. You can turn certain features on and off and change how the mode is accessed. There is also a developer option to force apps to split screen.

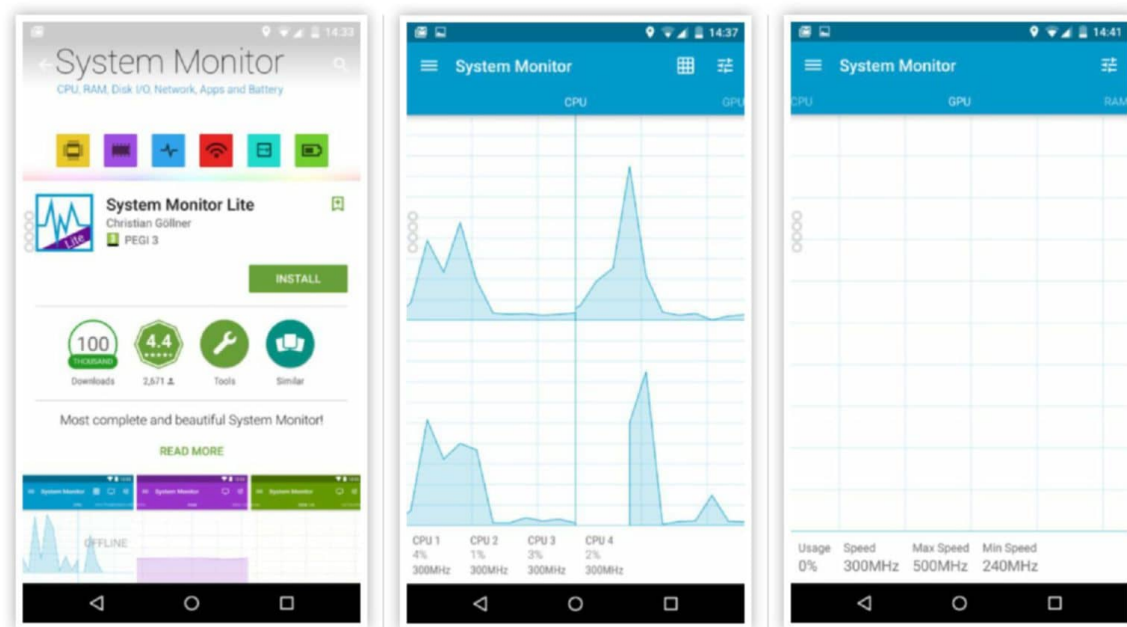


# Using a System Monitor

Task Managers, the apps which monitor your device and kill any background tasks which could be slowing things down, were once one of the most recommended tools for Android. Modern versions of the OS, however, have no need for task managers as they become increasingly good at assigning system resources intelligently. But that doesn't mean there isn't a place on your device for some system monitoring to keep things running smoothly.

## Monitor System Statistics

Being able to easily view important system stats is the first step towards making sure that your Android device runs smoothly.



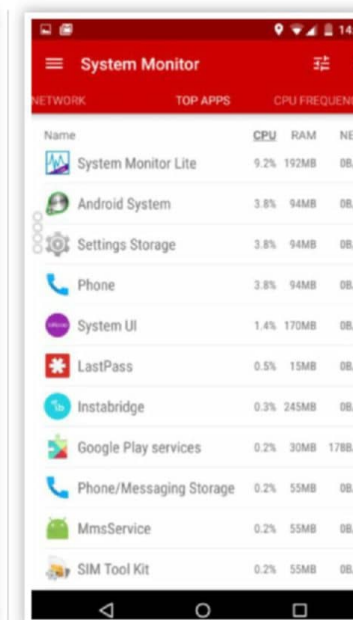
1 There are lots of different system monitors available, both free and pro versions, which will monitor a variety of system functions. We have chosen the Lite version of System Monitor by Christian Gollner. This version is free, but offers the option to upgrade should you want to.

2 Once installed, open the app to set the monitor running. The initial screen will show CPU usage on a graph, in real time. If your device is a multi-core, this will be split into two or four separate charts, showing what each of the cores is doing. Tap the Grid button to view the CPU as a whole.

3 Swipe left to see the next graph, showing the GPU (if applicable on your device). In most cases, the GPU should not be using any system resources unless you have something running in the background. Current, minimum and maximum speeds are shown at the bottom of the screen.



4 For a smoothly running device RAM usage, shown on the next graph, is one of the most important system stats you can monitor. At the bottom of the screen you will see the total amount of RAM available, as well as how much is currently being used. Try to keep this lower than the amount free.



5 The remaining real time graphs show monitoring on Disk I/O and the Data Network (if you are currently connected to a mobile data network). After this you will see the Top Apps screen. This is particularly useful for checking which apps use the most system resources.



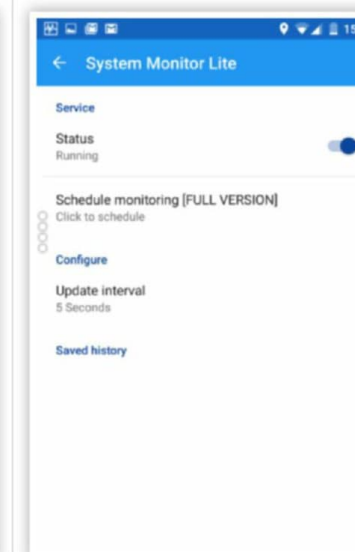
6 If you are struggling for storage space on your device, the Storage Stats should come in handy. You can view storage stats by either swiping left from the other graphs, or tapping the Menu button and selecting it from the list. The full version of the app allows you to delete directly from the list.



7 The Battery and Battery Stats let you see exactly what is happening with your device battery between charges. The Battery graph shows the current charge level, and a graphical estimation of when that charge will run out based on current usage. For more detail, tap Battery Stats.



8 A big indicator of heavy battery use is temperature. The temperature graph allows you to see when your device has heat spikes, indicating high power usage. Using the timeline, you may be able to link the spike to a particular app or feature you were using.



9 To build an accurate picture of your system resource usage, you really need to let the app run in the background for a few days, so it can gather information when you are using the phone or tablet normally. Tap the Settings button > Background Monitoring and tap the slider to turn it on.

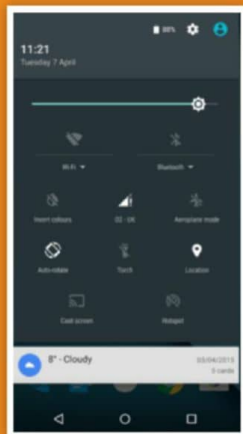




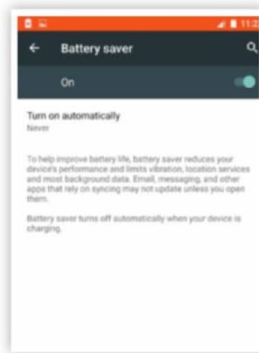
# Android Power Saving Tips

Short battery life has been a drawback of all smartphones for as long as they have been around, and the problem seems to be a never-ending one. As device manufacturers improve battery technology and capacity, more power-hungry processors have become the norm. Programmers get better at building battery-friendly apps, and then users are encouraged to install more and more apps on their phones. There are, however, several things users can do to increase the length of time between charges.

## Quick Settings

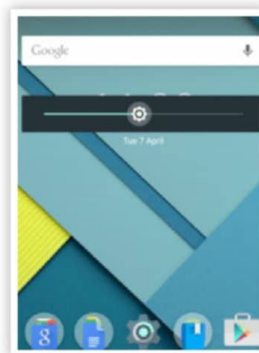


▶ Many current Android devices now allow you to quickly see and control what services are running (Wi-Fi, GPS, etc.) This is similar to the Power Control widget found on some other devices. Although the quick settings don't actually save battery power, they do allow you to quickly and easily keep battery draining services under control.



## Power Saving Mode

▶ Many Android smartphones and tablets now include a Power Saving feature which, with the flick of a switch, can automatically activate several power-saving tools. These include limiting the performance of the CPU, reducing the amount of power going to the display and turning off Haptic Feedback. You can either let all of these tools be activated, or pick and choose which to use. You probably won't want to activate all of these tools all of the time (limiting the CPU, for example, will seriously affect the speed of your phone), but if you need to squeeze a few more hours of battery life out before you can get to a charger, it can work well.



## Adjust the Backlight Brightness

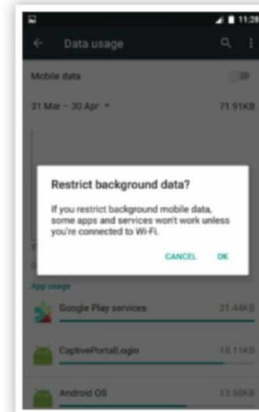
▶ One of the quickest and easiest ways to save some battery juice is to turn down the brightness of the screen backlight. There are a couple of different methods to do this. Open Settings > Display > Brightness and then move the slider down to wherever you think is acceptable. Less than 50% is advised. You can also access the brightness control from the Notifications panel. On that screen you should also see Automatic Brightness. Ticking that box will take control of the screen brightness out of your hands and instead trust the phone (using the ambient light sensor) to decide how bright the screen needs to be. Typically, this works very well.



## Change the Wallpaper

▶ Getting rid of your lovely Live Wallpaper isn't going to give you an extra 24 hours for watching videos, but it will make a slight difference if your phone is really struggling to last a day. And if you're changing to static wallpaper, choose a dark (preferably black) one. The pixels in AMOLED screens, found on many Android phones and tablets, are photoemissive. This means that they generate light. Having a black background allows the pixels to effectively turn themselves off.

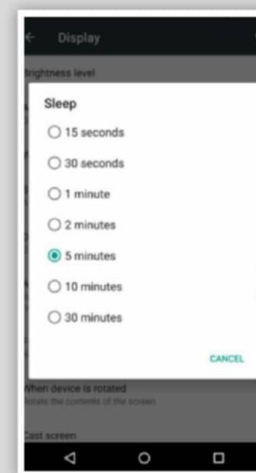
## Disable Always-On Mobile Data



▶ Always-on Mobile Data allows your phone to be connected almost constantly for things like checking for new email and Facebook updates. Disabling it will mean that you have to manually refresh an app to check for new messages, etc., but you will save quite a lot of battery juice.

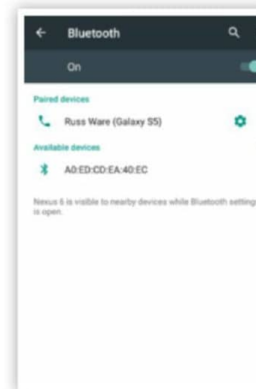
## Decrease Screen Timeout

▶ Again, this will not save massive amounts of power, but every little helps! And do you really need your screen to stay on for ten minutes after you finish using the phone? Obviously you can switch off the screen manually before you put your phone in your pocket, but each time you get a notification or a message and then don't check it or don't hear it, your screen will stay on for whatever period is set.

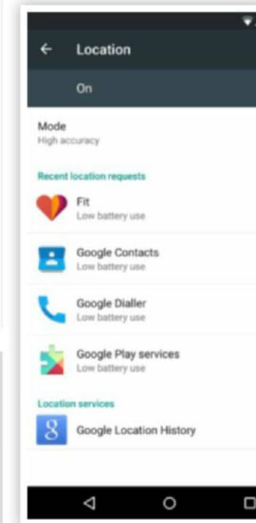


## Turn Bluetooth Off

▶ A surprisingly large number of people leave Bluetooth running all the time. Quite apart from being a bit of a security issue, Bluetooth will also use up a big chunk of your battery power over the course of a day, even if not actually sending or receiving files. To turn off Bluetooth go to Settings > Bluetooth. You can also control Bluetooth with the Quick Settings.



## Turn GPS and Wireless Networks Off

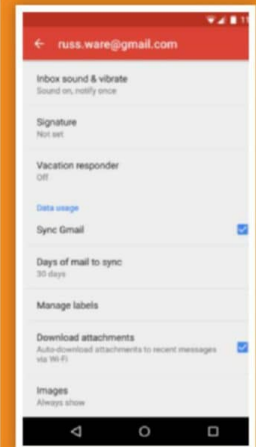


▶ Having GPS turned on will drain the battery like almost nothing else. If you are using location-reliant apps, then of course you may need to have GPS on. Just remember to turn it off when you aren't using it. Turn off GPS either with the Quick Setting buttons or go to Settings > Location Services. While you're in Location settings, make sure that Use Wireless Networks is also un-ticked if you are not using location-reliant apps. This option uses less battery than GPS, but it is also easier to forget it is switched on.

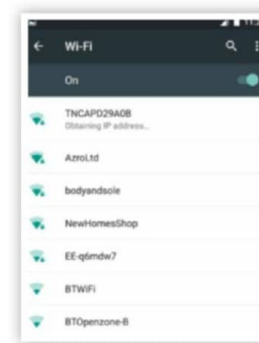
## Turn Wi-Fi Off (or Have it Always On)

▶ Following a bit of a theme, turn Wi-Fi off when you don't need it. Alternatively, if you are usually near a reliable Wi-Fi connection, set it to be Always On. Wi-Fi uses less battery than a data connection, and when Wi-Fi is on, 3G will be off. Go to Settings > Wi-Fi. Press the Menu button and then choose Advanced. Open the Wi-Fi Sleep Policy menu and choose Never.

## Reduce Update Frequency



▶ If you don't want to disable Always-On Mobile Data, you can go into each app which updates regularly (Facebook apps, Twitter apps, etc.) and change their individual settings to update less regularly. Where you will find this setting varies between apps, but it will usually be in the main settings menu for the app, sometimes under Notifications. You can also change the update and sync frequency of some apps by going to Settings > Accounts and Sync. Choose an app and then Account Settings. Change the update interval to something less frequent.





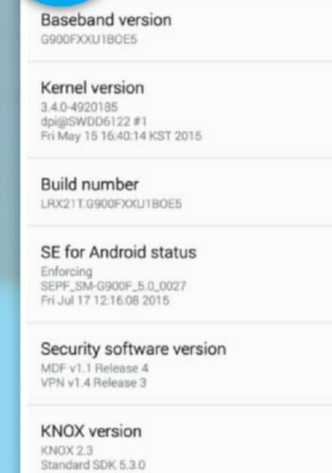


# BECOMING AN ANDROID EXPERT

We are sure that you will want to keep your new Android device running as smoothly as possible, and for as long as possible. Our advanced and expert guides will introduce you to the developer options and rooting, show you the best ways to prolong the battery life, protect your device from the threat of viruses, create a full backup and much more besides.

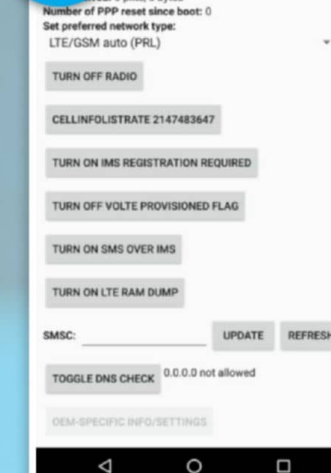
Using the Developer Options	106	Understanding Doze & App Standby	124
Speed Up Android Animations	108	Android Rooting Guide	126
Cut Blue Light with Twilight	110	Using a Root Toolkit	130
Hidden Android Test Menus	112	Android Rooting Terms	132
Save Web Pages Offline	114	Tips for After You Root	134
SMS Messages on a Wi-Fi Tablet	116	Smart Home on a Budget	136
Dealing with Viruses on Android	118	10 Android Security Tips	138
Disable Android Bloatware	120	Clean Up with Smart Manager	140
Sideload Android APKs	122	10 Common Problems Solved	142

106



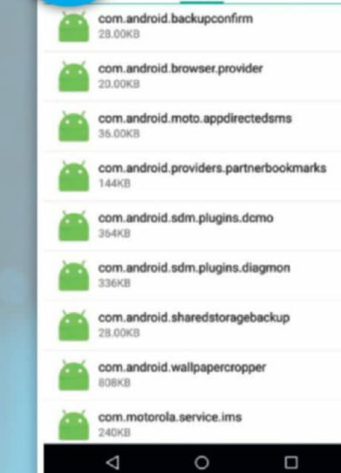
Using the Developer Options

112



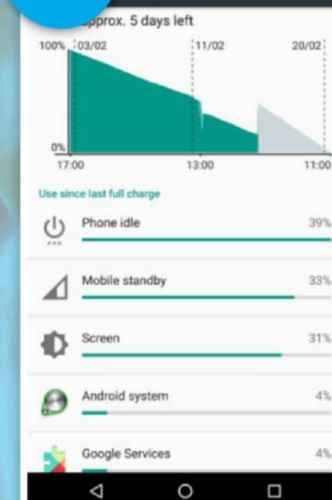
Hidden Android Test Menus

120



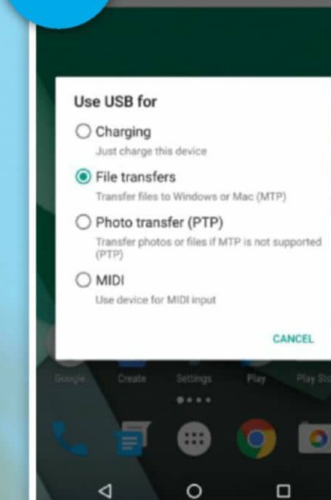
Disable Android Bloatware

124



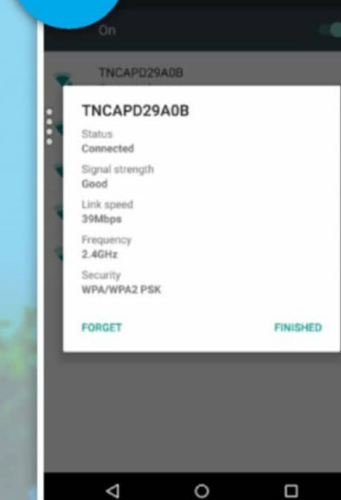
Understanding Doze & App Standby

130



Using a Root Toolkit

142



10 Common Problems Solved






# Using the Developer Options


Every Android smartphone and tablet contains a secret set of options - the Android Developer Options. As the name suggests, these are intended principally for developers of apps, used for debugging or simulating certain conditions. There are, however, several options within this menu which more adventurous Android users can utilise to good effect.

## Enable Developer Options


If you choose to do so, before you can start to use the developer options, you will need to unlock and activate them in the settings.



**1** Open the main settings app and locate the About Device menu. This menu gives you access to lots of information about your phone or tablet. Scroll down until you see the Build Number section.



**2** Tap on the Build Number heading ten times quickly. As you do so, you will see a message appear saying "You are now a developer". Continue to tap the build number heading and the message changes to "You are already a developer".



**3** Tap Back and look for the new heading Developer Options in the main settings. Once you open the developer options menu, you will need to use the slider at the top of the screen to enable access to them and allow them to be modified.

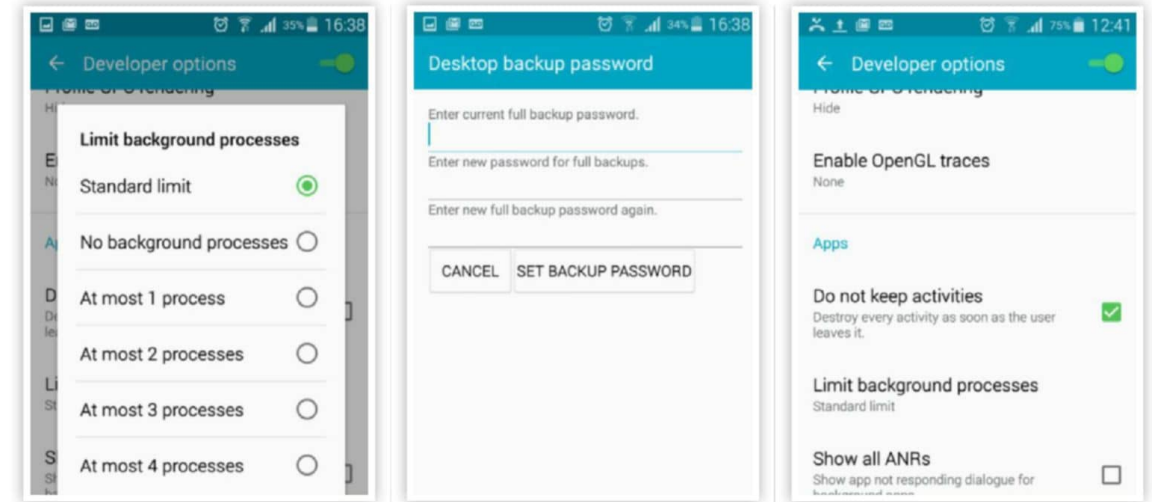
## What is ADB?

Android Debug Bridge (adb) is a versatile command-line tool that lets you communicate with a device (an emulator or a connected Android device). The adb command facilitates a variety of device actions, such as installing and debugging apps.



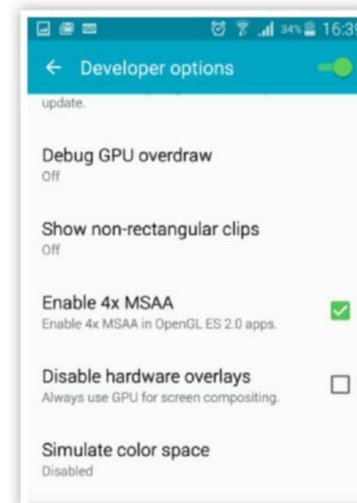
## Useful Developer Option

Not all of the developer options are worth changing, or indeed should be changed unless you really know what you are doing.



### 1 - Limit Background Processes

Scroll right down to the bottom of the list and you will see Limit Background Processes. This option lets you set how many processes can run in the background on your device at any one time. Be aware that too small a limit might be counterproductive.



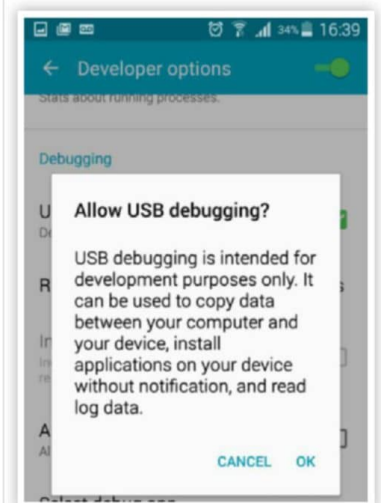
### 2 - Desktop Backup Password

The Android Developer Options allow you to backup and restore to your PC things such as apps and their associated data. This option requires a password for such backups. You will need to ensure that your device can connect to your computer successfully.



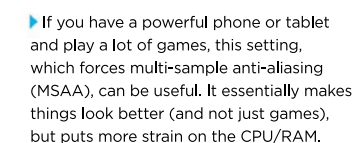
### 3 - Don't Keep Activities

Although you need to be a bit careful about using this setting, it can be useful if your phone struggles after heavy use. This option force-closes every application as soon as you leave its main view. Use either this or the Limit Processes option, not both.



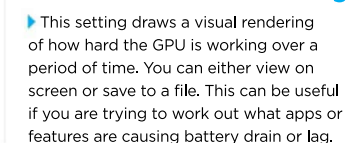
### 4 - Force 4x MSAA

If you have a powerful phone or tablet and play a lot of games, this setting, which forces multi-sample anti-aliasing (MSAA), can be useful. It essentially makes things look better (and not just games), but puts more strain on the CPU/RAM.



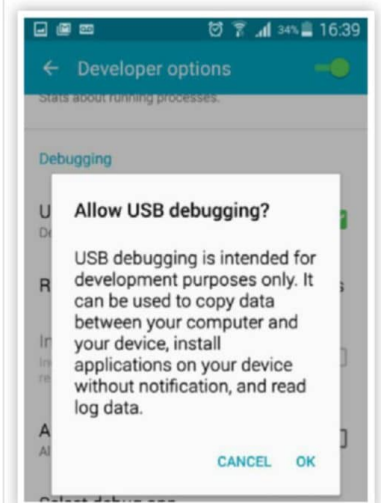
### 5 - Profile GPU Rendering

This setting draws a visual rendering of how hard the GPU is working over a period of time. You can either view on screen or save to a file. This can be useful if you are trying to work out what apps or features are causing battery drain or lag.



### 6 - USB Debugging

Allows your Android device to communicate via USB to your computer via the Android Debug Bridge (ADB). You can also revoke USB debugging authorisations. This setting will need to be enabled if you plan to flash custom ROMs during rooting.



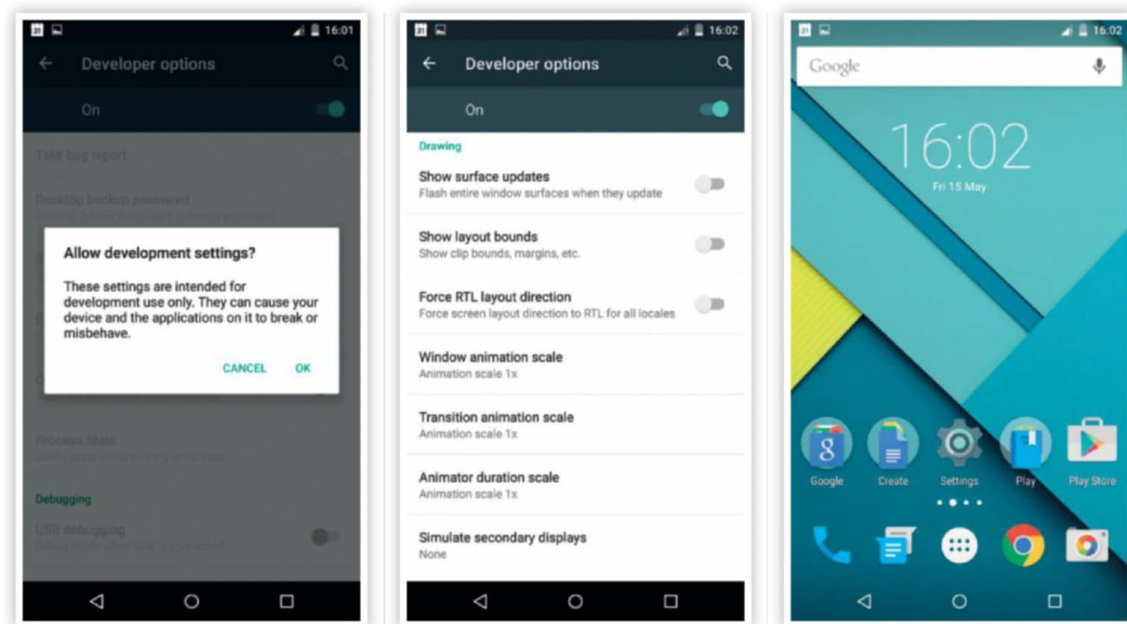


# Speed Up Android Animations

You may already know about the hidden developer menu available on all Android devices running version 4.0 or later of the OS. Within this initially confusing list of settings, you can find some really useful tools for making your device run faster and more smoothly, as well as a few simple tweaks to get the most from your phone or tablet. Here we will look at using animation settings to improve overall performance.

## Modify Animation Settings

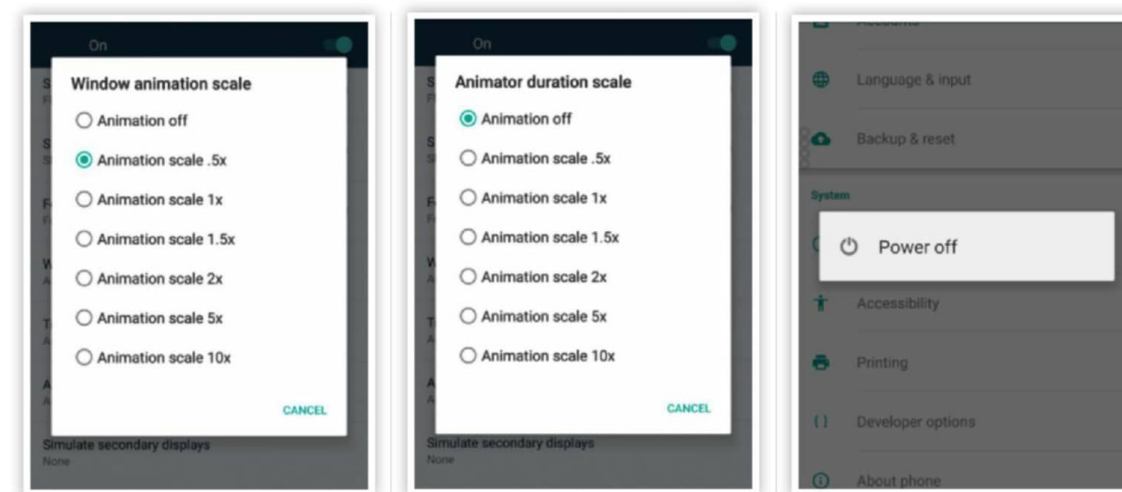
You can now begin to modify development settings, including the animation settings. It is a good idea to back up your device before continuing.



**1** Whilst it may be tempting to play around with the settings here, we suggest leave everything alone until you know what the possible effects could be. And if you do decide to change developer options, change them one at a time and test the changes before altering anything else. Otherwise it can be hard to know what caused any problems that occur.

**2** For this guide, we are looking at animation options, which can be found in the "Drawing" section about halfway down the list of settings. You will see three animation settings: Window animation scale, Transition animation scale and Animator duration scale. Each of these options will be set to "1x." This means animations running at normal speed.

**3** Before we go further, you should understand what is meant by animations on Android. Without animations, switching home screen panels, opening apps or scrolling would appear to be an instant switch from one screen to another. Animations provide the sliding effect of home panels or the grow effect when opening a new app.



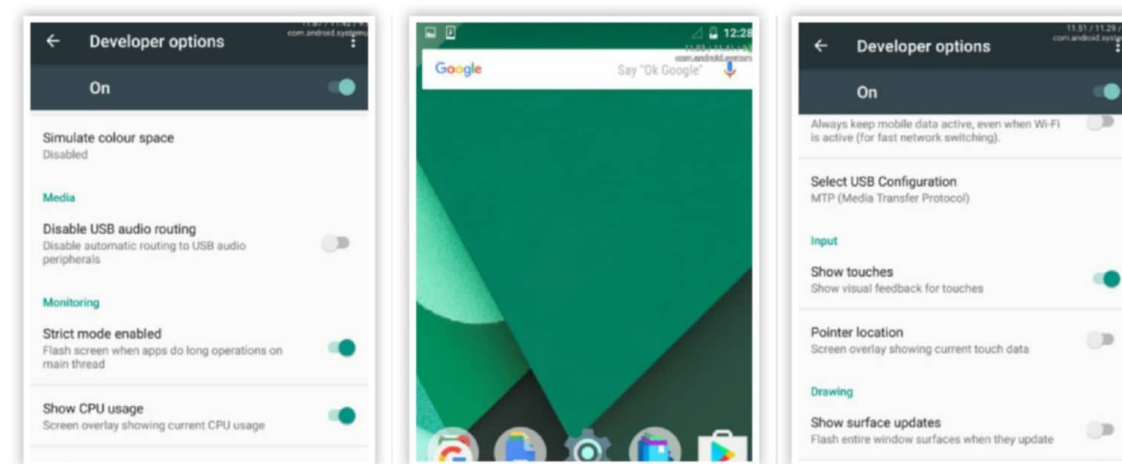
**4** Your device has to process these animations every time you switch screens or open an app. But by reducing the animation speed to ".5x", you can speed up all transition effects and not only improve how fast your device runs, but the shorter animation sequences will also make the device seem smoother.

**5** If you want to go further, you can change the animation scales to Off. You will speed up transitions and window animations to their fastest, but you will lose some of the smoothness of the operating system. Choosing .5x is a good compromise between speed and how your device looks when used.

**6** If you find that the changes are causing problems, or if you are seeing no improvement in animation speed, try restarting your device. If this still doesn't help, go back into the settings > Developer Options, and reset all of the changes to their original state (or simply turn Developer options off).

## Monitoring Performance

There are also several options in the Developer settings that allow you to monitor the performance of your device. This is useful if animation settings cause problems.



### Strict Mode

Enabling this option in the Monitoring section of the Developer settings will cause the screen to flash when apps perform long, potentially heavy data use operations. This allows you to see whether app animations are causing system strain.

### Show CPU Usage

This option puts an overlay on the screen that shows CPU (the main device processor) usage at all times. This will display as a red and green bar at the top right of the screen. It allows you to see which actions are causing the most CPU strain.

### Show Touches

This option is in the Input section and enables screen touch feedback. By viewing where the screen registers your touches, you can monitor whether the system is working accurately. If touches are out of place, you can sometimes fix this by restarting your device.



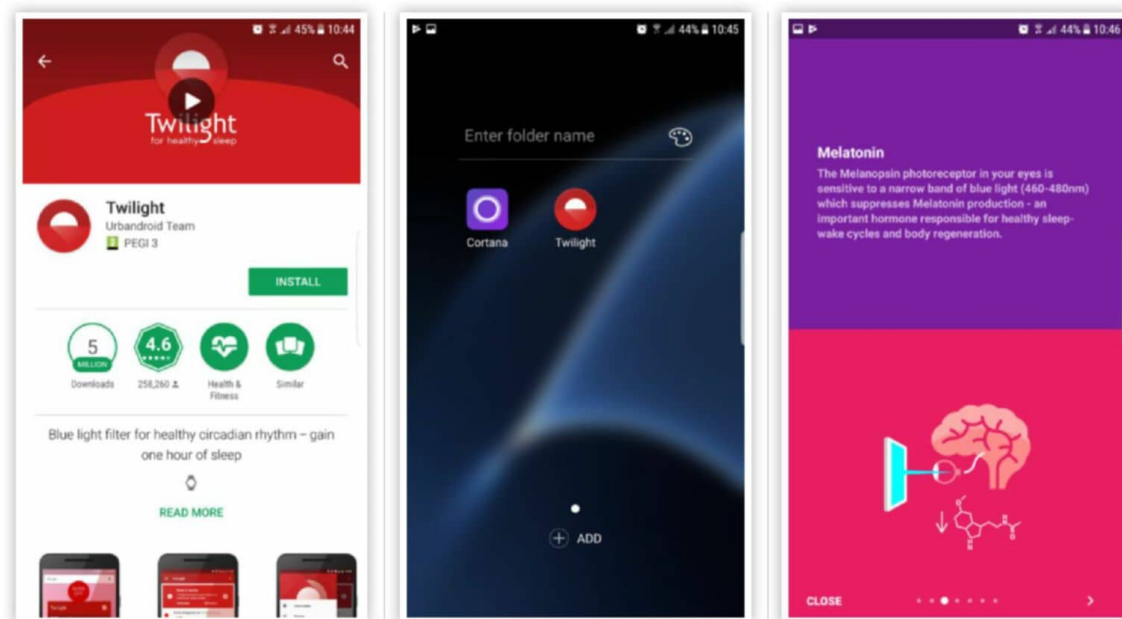


# Cut Blue Light with Twilight

Blue light, the type of light given out by almost all LED screens, has been shown to hinder our sleep patterns. This means that using a phone or tablet late at night can actually effect your overall health. Luckily, some clever app developers have created a solution. Twilight, just like Night Shift on the iPhone, will shift the colours in the device display to the warmer end of the spectrum, making it easier on your eyes and producing less of the blue light.

## Screen Shift App

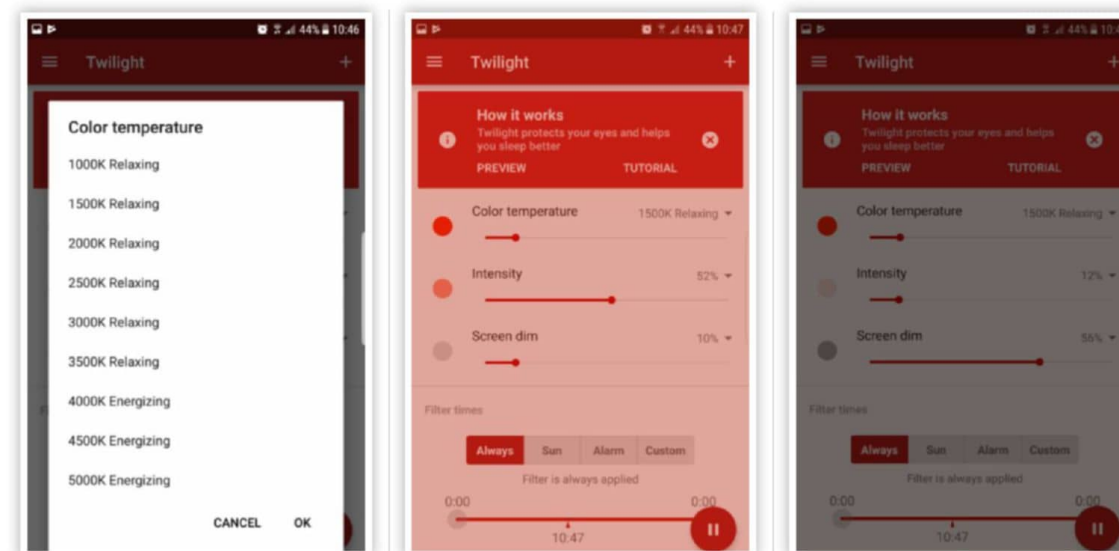
There are actually a few Android apps that will allow you to add a low blue light mode. For this guide we have chosen to use Twilight, as it offers more features than most.



**1** Search for, download and install the Twilight app from the Google Play store. The app is free, although some of the more advanced features will require an update to the Pro version. The app is compatible with almost all Android devices (phones and tablets) currently available.

**2** Twilight is designed to be a "set and forget" app. This means that you shouldn't really have to mess about with settings once the initial set up is complete. The first screen that appears after tapping the app icon contains every option you need to get set up correctly.

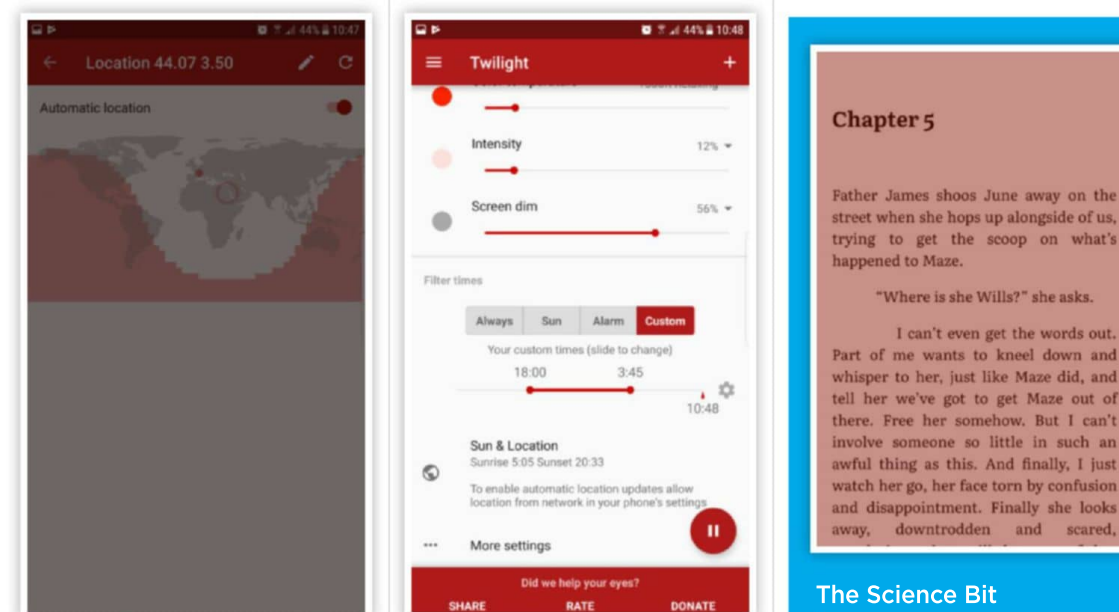
**3** If you want to read more about the science behind Twilight and other night shift apps, tap the "How it works" option at the top of the screen. This explains the theory behind the app, as well as directing you to places where you can read more about blue light, circadian rhythms and more.



**4** The next option is Colour Temperature, which is initially set at 1500K (relaxing). You can use the slider to alter the colour temp to suit your own preference. You can even set the colour temp to over 3500K, which is classed as Energising rather than Relaxing. Tap the Preview button to test.

**5** The Intensity slider controls how intense the selected colour is. 1% is basically turning it off, whilst 100% will normally be way too intense, making your screen very red. The default of 40% is a good place to start but we found that reducing that to about 30% can work just as well.

**6** If you want to set the screen to dim whenever the night shift mode kicks in, use the next slider to control how much it dims by. Again, you can test your settings by tapping the Preview button. A slight dimming of the screen is thought to be good for the eyes, but the choice is yours.



**7** It is now time to decide when you want the Twilight filter to automatically start and finish. The default is Sun, meaning that it will detect the sunset and sunrise times and turn on and off accordingly. You will need to enable Location Services for the app to use this option.

**8** If you prefer not to allow automatic location detection, you can choose a custom time range. Tap the Custom button and use the slider to change the timeframe when the feature is activated. The feature is now set up, so just close the settings by pressing the Home button.

## Chapter 5

Father James shoos June away on the street when she hops up alongside of us, trying to get the scoop on what's happened to Maze.

"Where is she Wills?" she asks.

I can't even get the words out. Part of me wants to kneel down and whisper to her, just like Maze did, and tell her we've got to get Maze out of there. Free her somehow. But I can't involve someone so little in such an awful thing as this. And finally, I just watch her go, her face torn by confusion and disappointment. Finally she looks away, downtrodden and scared,

## The Science Bit

Lots of recent research has shown that exposure to blue light, the type of light our smartphone and tablet screens produce, can distort your natural circadian rhythm and subsequently, create an inability to fall asleep easily. Apps like Twilight work by filtering out the blue light our screens produce.

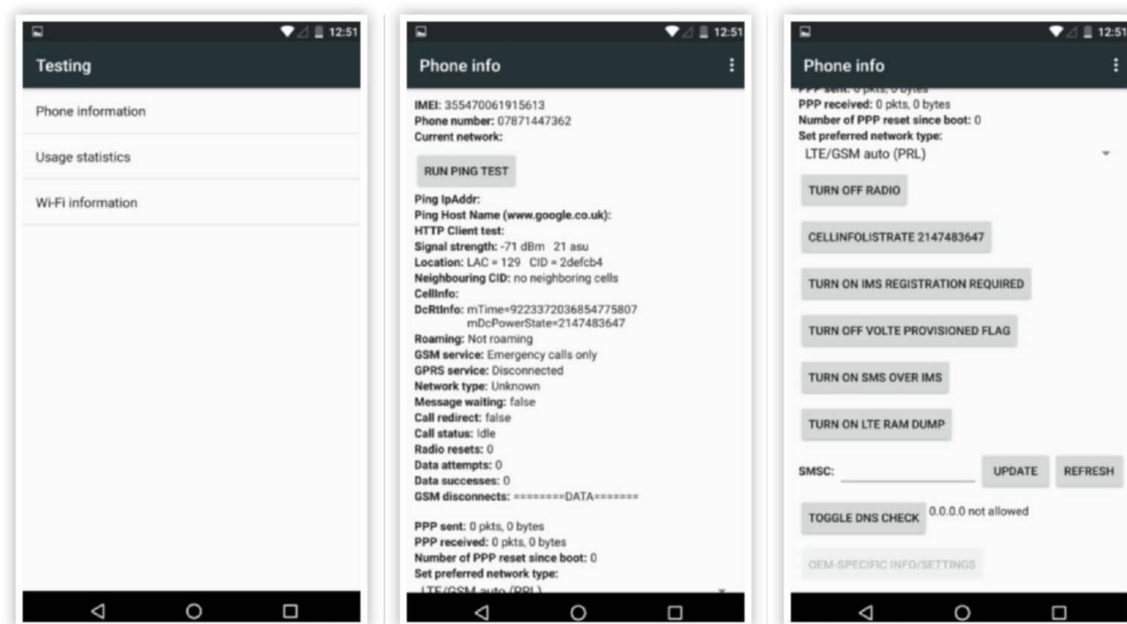


# Hidden Android Test Menus

Hidden within every Android device is a collection of different test menus, that allows users to check allsorts, including how well the touchscreen is responding and whether the notification LEDs are working. You don't need any special apps or additional software to access these test menus, you just need to know which code to enter into the dialler screen. Let's take a look at some of the most useful test menus and what they allow you to do.

## Testing Menu Code

Whichever carrier or manufacturer is involved, these test codes should work for the majority of Android devices. If they do not, try searching online for specific codes for your particular device.



1 ▶ Open the phone dialler screen on your phone and type **\*#\*#4636\*#\*#\***. As soon as you type the last \*, the test menu will appear on screen. This contains four main sections: Phone Information, Battery Information, Usage Statistics and Wi-Fi Information. Tap any heading to see more info.

2 ▶ You can gain access to a lot of general information about your phone by going into the Phone information menu. You will also be able to run a PING test that checks the speed of connection to your current phone mast. Be careful when running tests or changing configurations.

3 ▶ If your device has a removable battery, you can find lots of detailed information about the battery in the Battery Info screen. As well as showing the charge percentage remaining, it will reveal if the battery health is good, letting you decide whether buying a replacement is worth considering.



## Useful Android Test Codes

▶ Here are some more Android test menu codes to try out. These may not work for every device, but should work for most Android phones.

Camera Information - **\*#\*#34971539\*#\*#\*** - To see detailed information about the camera hardware and software in your phone.

Service Test Mode - **\*#\*#197328640\*#\*#\*** - This Android secret menu lets you access service mode where you can run various tests.

LCD Test Code - **\*#\*#0\*#\*#\*** - This lets you test the LCD display on your device, to see if there are any display errors.

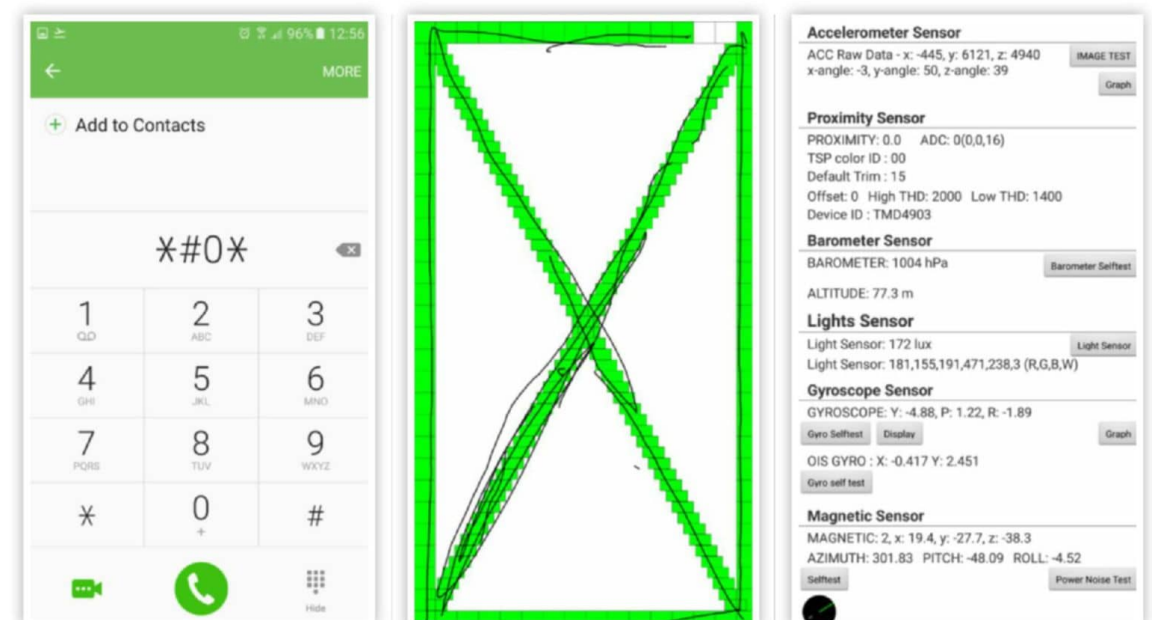
RAM Details Menu - **\*#\*#3264\*#\*#\*** - This Android secret code can be used to find out your phone's RAM version.

Touch Screen Test - **\*#\*#2664\*#\*#\*** - If you want to test your phone's touch screen, then use the code shown here.

Phone IMEI Number - **\*#06#** - One of the most popular and useful hidden menu codes for Android, showing you the IMEI number of your device.

## Samsung Service Test Mode

If you are using a Samsung device, such as the S6, you can access a unique menu that gives you access to all sorts of tests.



1 ▶ As with the previous codes, you will need to enter this one into the dialler screen on your Samsung phone. Enter the code **\*#0\*#**. As soon as you enter the code, the test menu will appear. This code may not work on very old Samsung Galaxy phones but it should on most.

2 ▶ The screen should now be filled with buttons giving access to the tests shown on each. Within each test there may be additional options or requirements. The Touch screen test, for example, requires you to use your finger to highlight all of the elements on the screen before it will complete.

3 ▶ You can leave any of the tests, either when they are complete, or by tapping the Back button on your phone. Once you have completed all of the tests you want to perform, you can leave the test menu by tapping the Back button on your phone twice in quick succession.



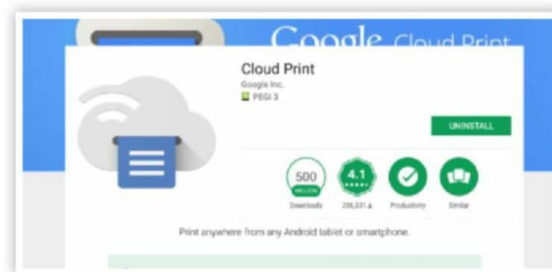


# Save Web Pages Offline

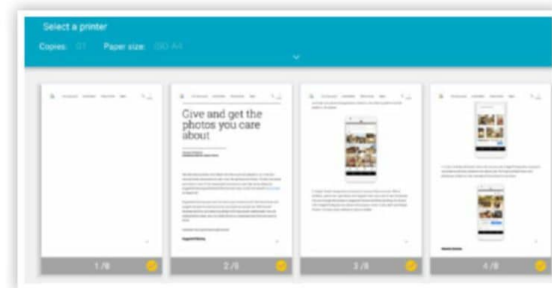
Your smartphone browser makes it easy to bookmark web pages which you might want to read or refer to at a later date. But what about those occasions when you know you will need to read something online, but also know that you won't have access to a Wi-Fi or Mobile Data connection? Sure, you could spend a load of time cutting and pasting copy from a page to a text document, but why bother when there is a much more elegant solution?

## Save Web Pages as PDF

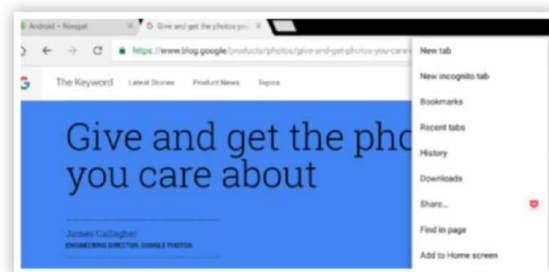
There are a few different options available to you when you want to save a web page for offline reading. The first we will look at is saving as a PDF file.



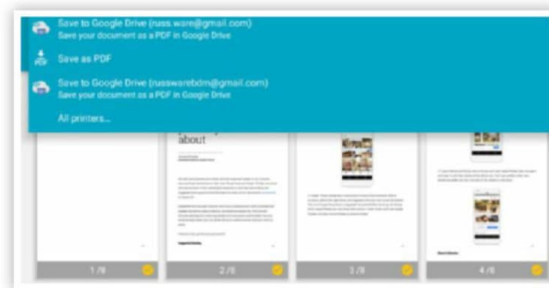
**1** This first technique should require no additional apps to be installed, instead taking advantage of the built-in support for PDF's which is part of the printing options on Android. However, if you are using an older device, with an older version of Android, you may need to install the Cloud Print app.



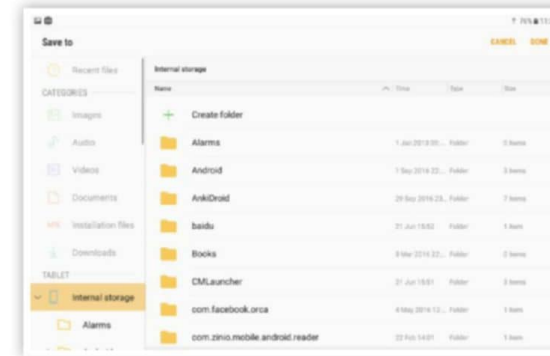
**3** The Print Preview screen will appear, showing you what would be printed (should you choose to do that). In most cases, you can use the check mark buttons on each of the displayed preview pages to select and deselect those you don't want. With the content you want selected, tap the printer name.



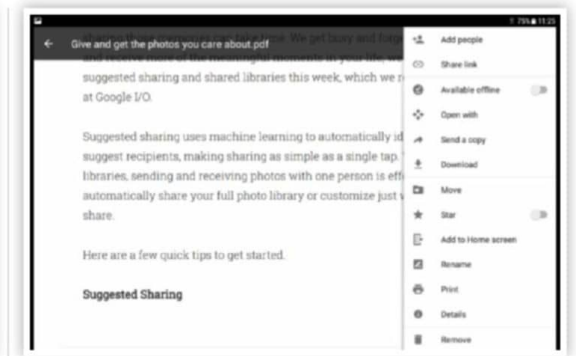
**2** Open the web page you want to save to read offline later. In this example, we are using the Chrome browser, but the same features are available in almost all third-party browsers as well. In Chrome, tap the Menu button in the top-right corner, and from the menu, tap the Print option.



**4** This will display any printers available to send the page to for printing. It will also include the option to "Save as PDF". Tap this option and the "Print" button will change to a "PDF" button. Tap this and a "Save to" menu will open. You can then choose to save to Google Drive or Downloads.



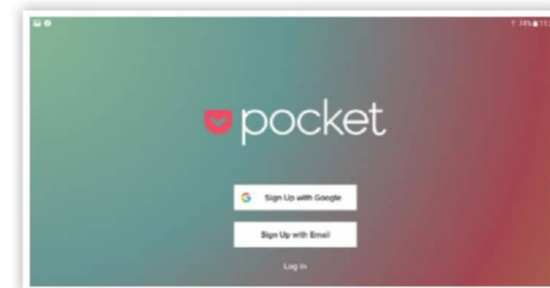
**5** Saving to Google Drive is a good idea, as this means the file will be available on any devices which are linked to your Drive. After a few seconds, the file is saved. The final thing you need to do is open Google Drive, tap the ! button on the file and use the slider to make it "Available Offline".



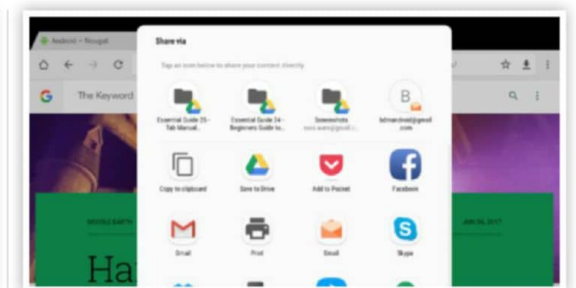
**6** You can, of course, choose to save to Downloads. This saves the PDF onto your device straight away (but only the device you download it on). The great thing about saving web pages like this is that everything is kept intact in the document, from text links to images and diagrams.

## Save Web Pages to Pocket

Pocket allows you to Save directly from your browser or from apps like Twitter, Flipboard, Pulse and Zite. You can download Pocket from the Play Store.



**1** The first thing you will need to do is set up a Pocket account. Open the app and tap the Sign Up button. Choose a username and password, and enter an email address. If you prefer, you can set up your Pocket account on your computer. Head over to [getpocket.com](http://getpocket.com) and look for "Sign Up".



**2** To save a webpage to Pocket, open your browser and navigate to the page. Tap the Menu button and select Share > Save to Pocket. Open Pocket and view your list. Here you will see any saved pages, including a thumbnail image if the page had any (the main image will be shown).



**3** Tap any item in the list to view it. You can change the display style, including screen brightness and font size, using the buttons at the top of the page. Once you have finished reading the article, you can archive it by tapping the Tick button. Alternatively, tap the Menu button and delete the article.



**4** Pocket will save pages in a stripped down form, which usually means that images won't display when reading offline in the app. If you prefer, and if you have an Internet connection, you can tap the menu button in Pocket and select "Switch to Web View" to see the original full version.

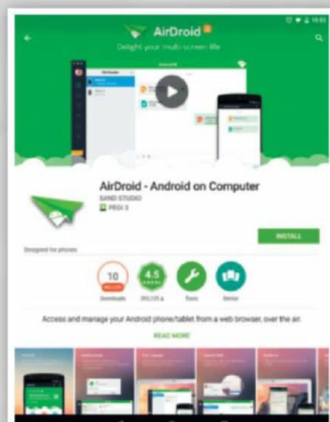


# SMS Messages on a Wi-Fi Tablet

Not all tablets are created equal, and if you have a tablet with no SIM card slot, you are slightly limited in your communication options. Or rather, you were slightly limited. Thanks to apps such as Mightytext, you can set up your non-3G tablet to receive SMS messages from your Android phone, using the same number.

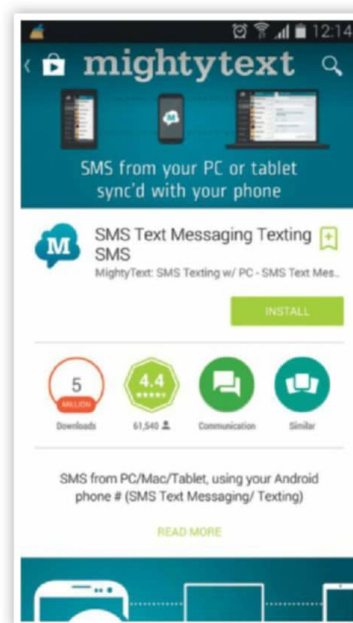
## Mightytext Alternative

► If instead of wanting to receive messages on your tablet, you want to receive them on your PC or Mac, the best option is the superb AirDroid. AirDroid allows you to access and manage your Android phone or tablet from Windows, Mac or the web, wirelessly, for free. AirDroid lets you focus on your PC, type with a full physical keyboard and control with a mouse, and transfer things faster without looking for a cable. AirDroid also makes it easy to transfer files between your phone and computer.

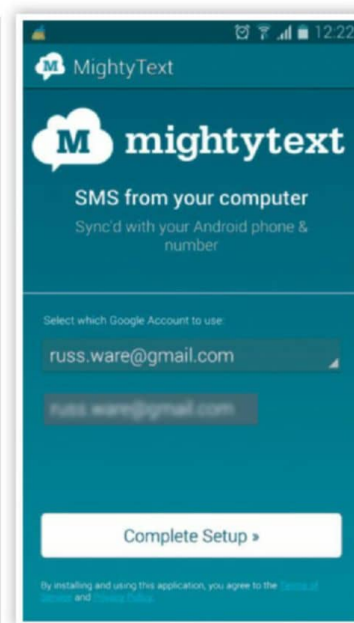


## Running Mightytext

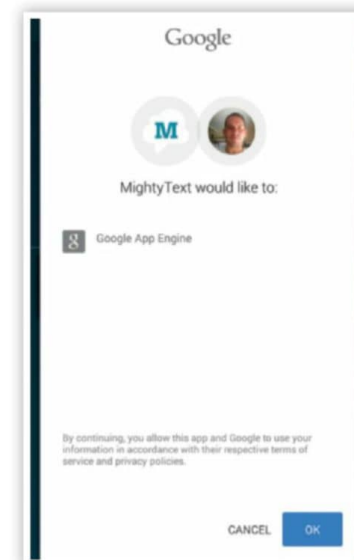
Mightytext will only work if you have a compatible smartphone to run the parent app. This is the software which sends the SMS messages to your tablet.



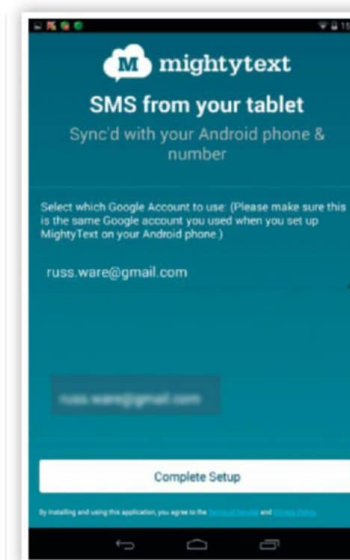
**1** Before you start setting up Mightytext on your tablet, you will need to install and set it up on the Android phone you will be using. Search for the app on your phone, and the phone version should automatically be displayed.



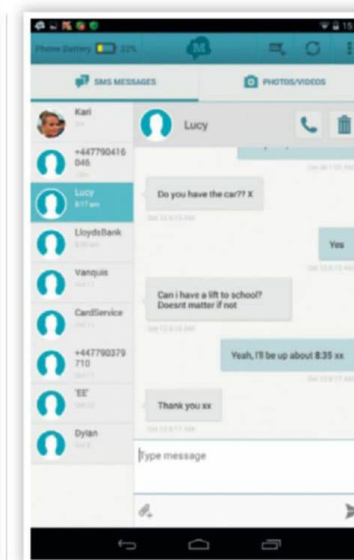
**2** Once it's installed on your Android device, open Mightytext and select the Google account you want to use from the drop-down menu. You will need to use the same account on both the phone and the tablet for the service to work.



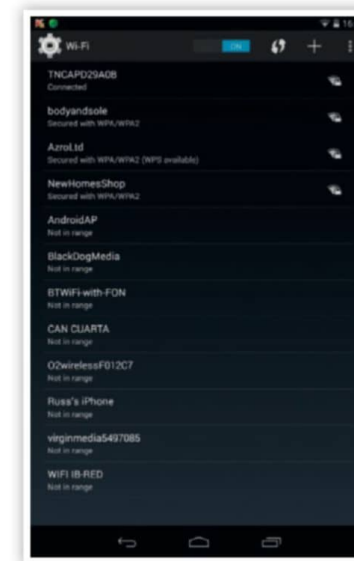
**3** Tap Complete Setup and then allow access to the Google App Engine when this is requested. If the setup is successful, "Connected" will be shown on the next screen. If you want to text from your computer, visit <https://mightytext.net/app>.



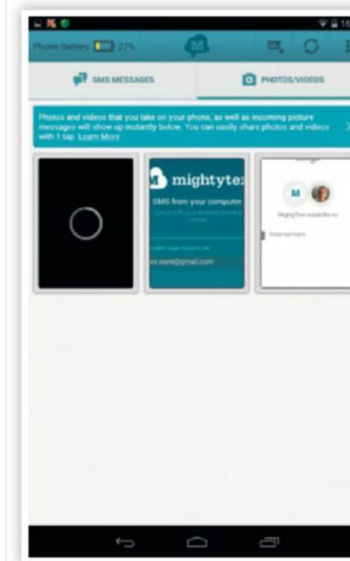
**4** Now install the app on the tablet you want to receive the SMS messages on. Make sure that the same Google account is selected on the tablet setup screen, then complete the setup. If you see an error message, run the setup again.



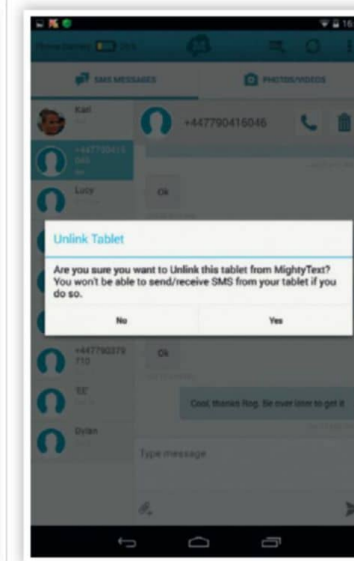
**5** Launch the Mightytext tablet app. If the connection is working, you will see your SMS messages and conversations from your phone on your tablet. The conversation list won't show all messages, just the newer ones.



**6** When you reply to a message via the tablet interface, a small confirmation message will appear below it on screen. This lets you know that the message was sent via the connected phone. Lose your Wi-Fi connection and messages won't send.



**7** You can also use Mightytext to sync photos and videos between your phone and tablet. When connected as mentioned, tap the Photos tab and then tap the Try it Now button. This will sync the seven latest photos taken on your phone.



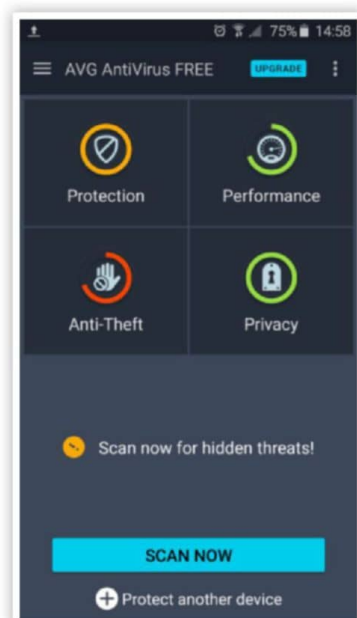
**8** You can temporarily stop receiving messages on your tablet simply by disconnecting the Wi-Fi on either device. If you want to unlink the two devices completely, tap the Menu button and select the Unlink Tablet option.





# Dealing with Viruses on Android

In some ways, when it comes to viruses, malware and other tech nasties, Android is a victim of both its own success and of its open nature. If you read any of the tech news, or even mainstream news sometimes, it can seem like virus threats on Android are increasing by the week. Exactly how much of a problem is this then and what is Google doing to make sure your device isn't affected? Read on to learn more about viruses on Android.

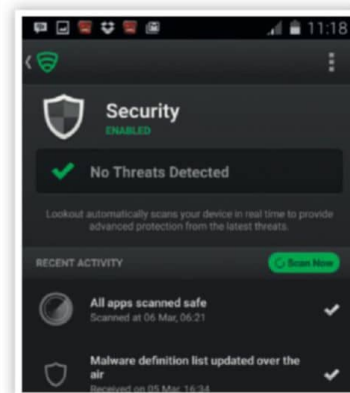


## Antivirus Software

Just like on your computer there are lots of different Anti-virus tools available on Android. One of the best free apps is AVG AntiVirus FREE. With AVG AntiVirus FREE for Android phones and tablets you'll receive effective, easy-to-use virus and malware protection, as well as a real-time app scanner, phone locator, task killer, app lock and local device wipe.

## Understanding Virus Threats

You really don't need to panic over the threat of viruses on your device, but it makes sense to know more about them.



### Android Viruses

There are thankfully still few known viruses which affect the Android operating system. One of the most well-known is Trojan-SMS.AndroidOS.FakePlayer.a. This was the first Trojan-SMS virus identified on Android, and was thought to have infected hundreds of thousands of devices. The virus was capable of sending SMS messages to premium rate numbers without the user having any indication that something was wrong, and therefore accumulating huge bills for many. Other well-known viruses include Gingermaster, which was capable of stealing user information from the infected device (user ID, SIM, IMEI, etc.) and DroidKungFu, which allowed back door access to the device and files to be removed.



### Android Malware

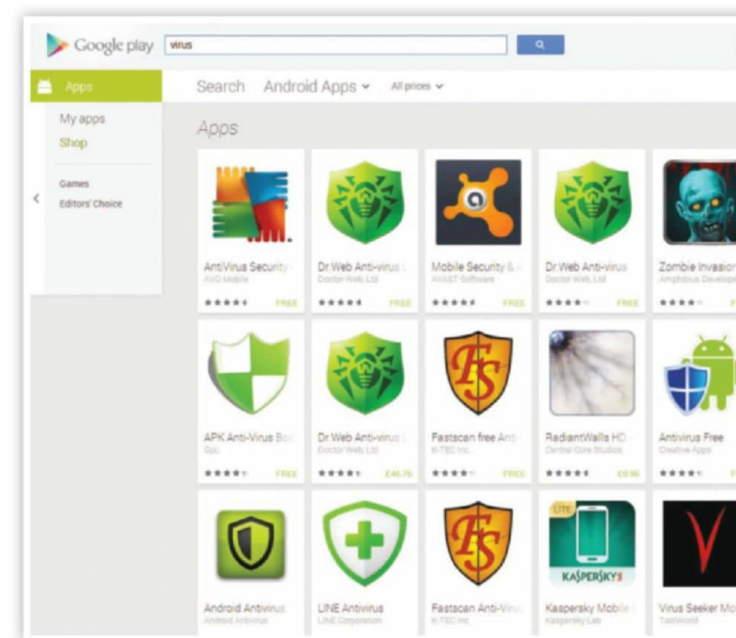
The distinction between viruses and malware on Android is something of a grey area. Viruses get called malware and malware get called viruses. It is safe to say, however, that you really don't want either to infect your device. One of the best known malware attacks was DroidDream (also known as Android. Rootcager) which affected around 60 apps on the Android Market (Google Play store) in 2011. The malware added infected devices to a botnet, installed additional software and stole data. It is thought that hundreds of thousands of devices were infected, even though Google was quick to release a fix for the problem.



## Virus and Malware Safety Tips

No operating system is completely safe, but it can be made safer by following a few simple steps. These tips will help to reduce the possibility of your Android device being infected.

- 1 Install a reputable anti-virus app on your device. Although the way Android is built means that anti-virus apps cannot be perfect, having one installed will at least catch some infections.
- 2 Avoid installing apps from third-party app stores if at all possible. Sideloaded (installing apps using the .apk files found on unofficial websites) can be a source of virus infection.
- 3 Google, via the Play Store, can remotely remove infected applications from your phone. If you receive a notification to tell you a suspect app has been removed, make sure that you double-check.
- 4 It is highly advisable to keep installation of apps from Unknown Sources set to Off in the device's settings. This will help ensure that nothing enters the system except through official channels.
- 5 Check permissions carefully. When you install any app from the Play Store, you are shown which permissions the app requires to work. If you don't like the sound of any of the permissions, avoid the app.



## What is Google Doing?

Although it hasn't always been super quick to remove infected or suspicious apps from the Play Store, Google is now taking the threat of malicious software seriously. It is getting quicker at removing dodgy apps, and in 2012 the company introduced Bouncer. Bouncer provides automated scanning of the Android Market for potentially malicious software without disrupting the user experience of the Android Market or requiring developers to go through an application approval process. Android also features several things that reduce the threat of malware and viruses.

### Sandboxing

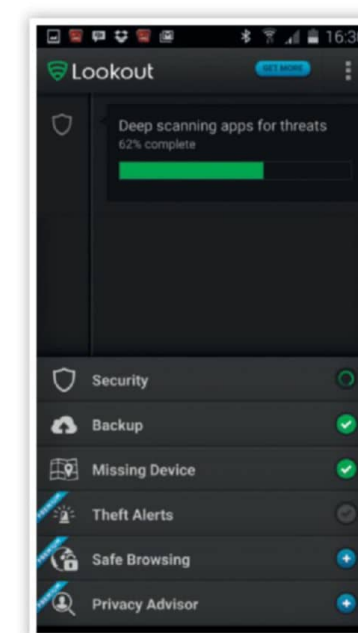
The Android platform uses a technique called "sandboxing" to put virtual walls between applications and other software on the device. So, if you download a malicious application, it can't access data on other parts of your phone and its potential harm is drastically limited.

### Permissions

Android provides a permission system to help you understand the capabilities of the apps you install, and manage your own preferences. That way, if you see a game unnecessarily requests permission to send SMS, for example, you don't want to install it.

### Malware removal

Android is designed to prevent malware from modifying the platform or hiding from you, so it can be easily removed if your device is affected. Android Market also has the capability of remotely removing malware from your phone or tablet, if required.



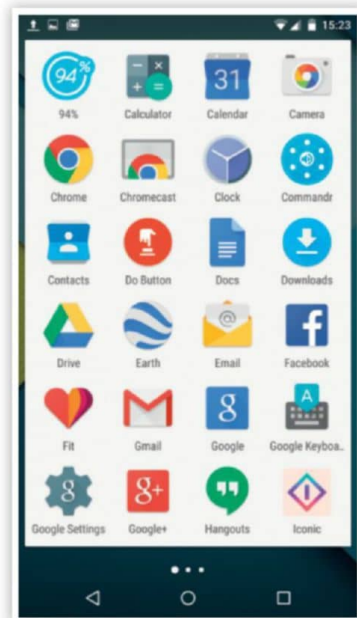


# Disable Android Bloatware

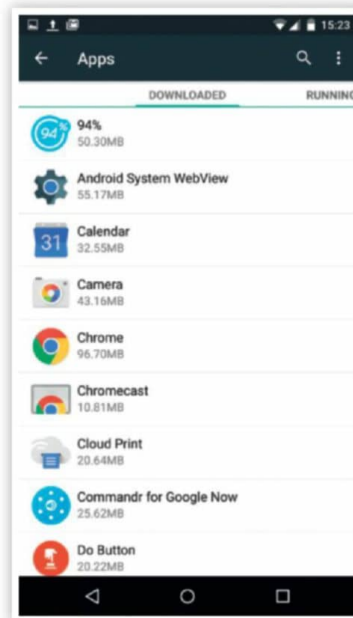
No matter which brand of Android device you choose, from Acer to ZTE, most are all guilty of containing at least a few examples of bloatware. Bloatware means apps or services added by the manufacturer or carrier which take up memory and processing power on a device. Unless you want to root your device, removing bloatware is not possible. Disabling it however is possible.

## Application Settings

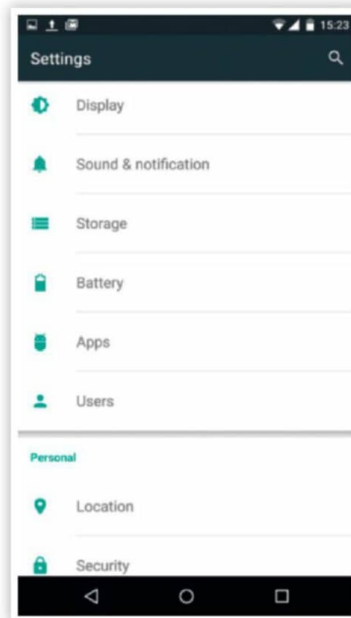
The exact location of the app settings will vary between devices. You should however, always be looking for Applications, App Management or App Settings.



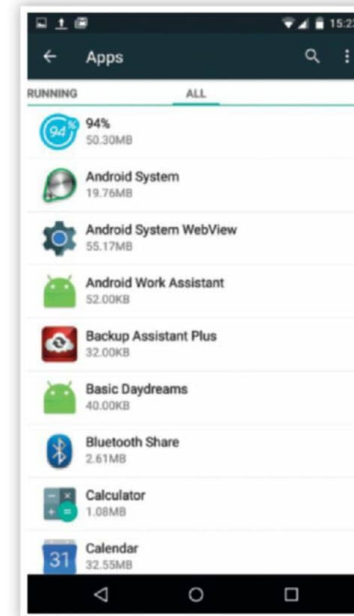
**1** ▶ When disabling bloatware, don't think that just because you don't use a particular app or service that it is not essential to your device. Removing essential apps or services may cause problems.



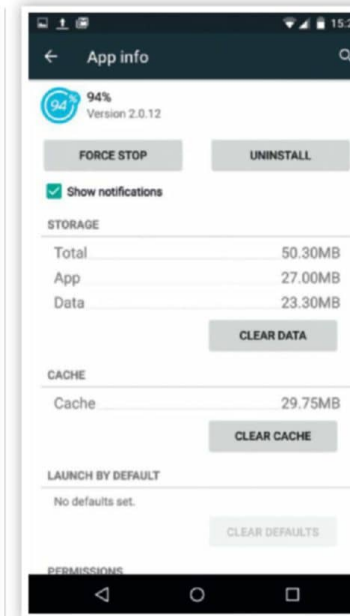
**2** ▶ The best way to put a stop to bloatware is to disable each app one at a time. Once you have disabled the app, check that your device is still working as it should before you go ahead and remove the next bit of bloatware.



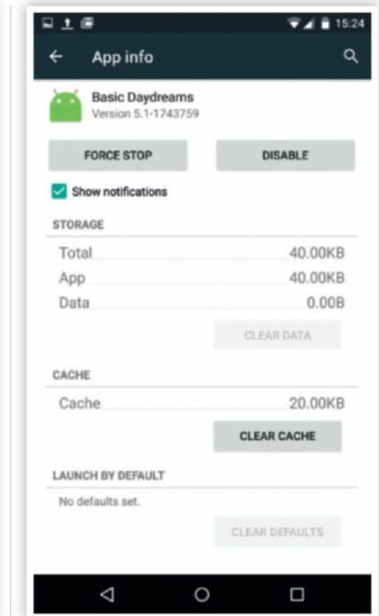
**3** ▶ Open the main settings app on your device and look for Application Manager. This may be in the main settings list or, on some devices, under the More tab at the top of the main settings screen.



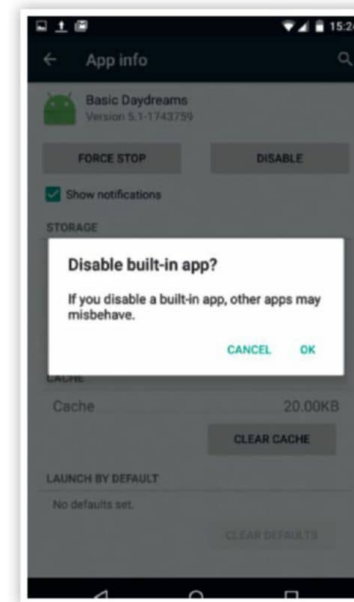
**4** ▶ Tap Application Manager and swipe across the screen to the left. This will reveal the different application categories (Downloaded, On SD Card, Running and All). To find bloatware, go to the All tab.



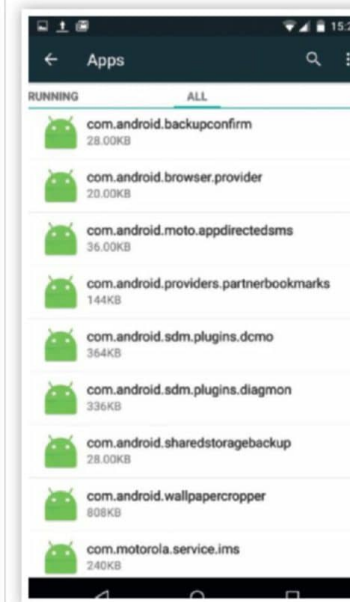
**5** ▶ When you find an app or service that you think you would like to disable, tap on the name. If the app or service is not bloatware, you will see an Uninstall button next to the Force Stop button (you might also see uninstall updates).



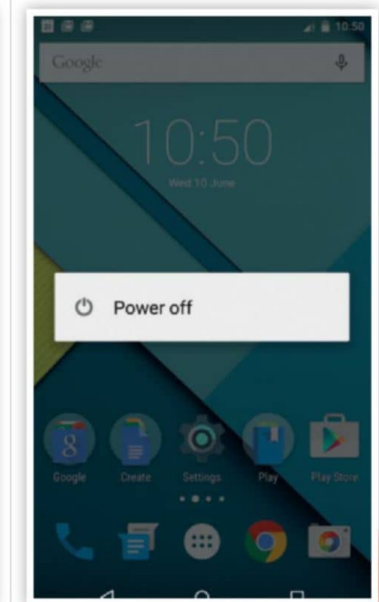
**6** ▶ When you find a bloatware app or service, the Uninstall button will say Disable instead. Some essential system services (such as the camera app or the Android system) will have the Disable button greyed out so it cannot be used.



**7** ▶ Click Disable on the bit of bloatware you want to stop. A warning will appear to tell you that completing this action may cause some apps to work incorrectly or not at all. Disabled apps will not appear in the app drawer.



**8** ▶ As a general rule, any app or service that should not be disabled will have an Android icon next to the name in the Application Manager. If you disable something by mistake, a restart of your device will often fix the error.



**9** ▶ When you finish disabling the bloatware you no longer want to have running, you may need to reboot your device for the icons to be removed from the home screen and main app drawer. It is best to perform a hard reset for a full reboot.







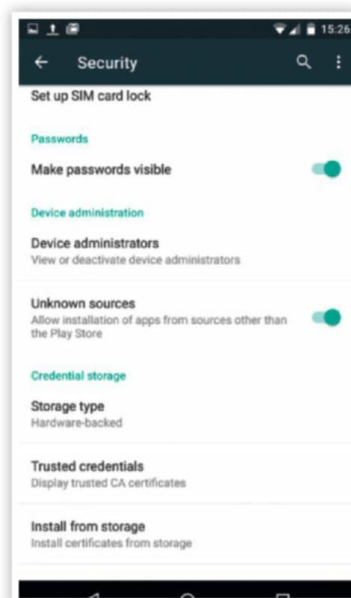
# Sideloading Android APKs

There are hundreds of thousands of apps available on the Google Play Store, from Angry Birds to Twitter to Groupon. Occasionally, there might be an app you want which isn't, for several possible reasons, available through the official download method. Although there are risks involved, it is possible to install apps using other methods. This is known as Sideloading.

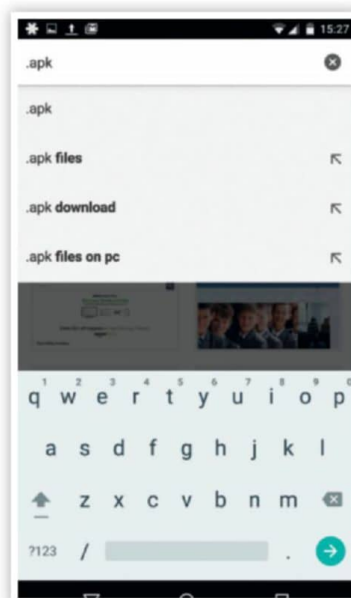
## Sideload with Confidence

Sideloading is inherently more risky than installing .apks from the Google Play store but as long as you take care, your device should be safe.

- 1 On your device (or any device running Android 4.0 or higher), tap the Main Settings app, tap the More tab and scroll down to Security. Under the Device Administration heading, select Unknown sources.



- 2 Selecting this option will allow you to install apps outside of the Google Play Store. Depending on your device, you can also choose to be warned before installing harmful apps by selecting Verify Apps.

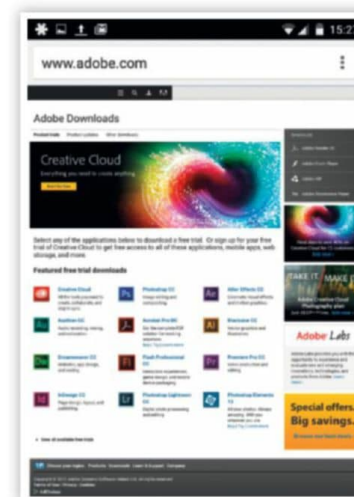


- 3 The next step will be finding an Android package file, also known as an APK, which is the way Android apps are packaged, distributed and installed. APKs can be found quite easily with a Google simple search.

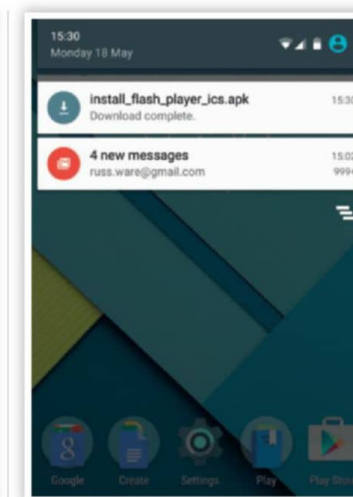


## Sideload Explained

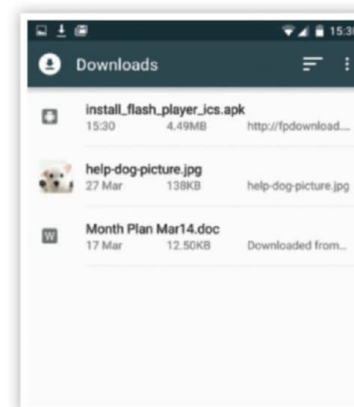
Sideloading is a term used in Internet culture, similar to "upload" and "download", but in reference to the process of transferring data between two local devices, in particular between a computer and a mobile device such as a mobile phone, smartphone, PDA, tablet, portable media player or e-reader. Sideload typically refers to media file transfer to a mobile device via USB, Bluetooth, Wi-Fi or by writing to a memory card for insertion into the mobile device. When referring to Android apps, "sideloading" typically means installing an application package in APK format onto an Android device. Such packages are usually downloaded from websites other than Google Play. Sideload of apps is only possible if the user has allowed "Unknown Sources" in their Security Settings.



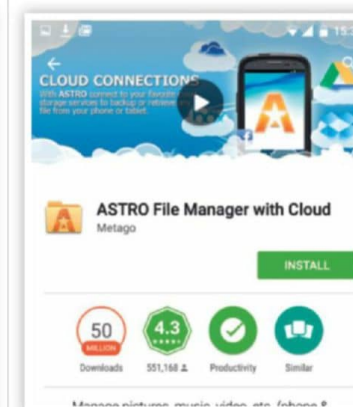
- 4 You should never use sideloading as a way to pirate applications. This is an almost sure-fire way of your Android device getting a virus. You should only download APK files from trusted developers and companies.



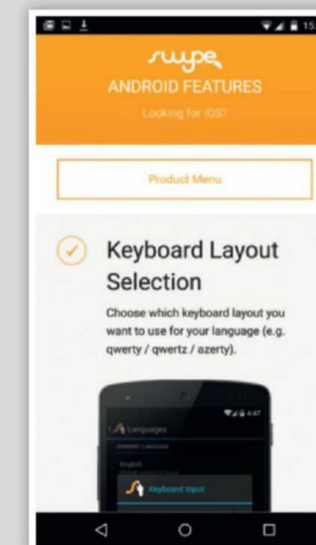
- 5 The easiest way to download and install an APK file is on your device. Use Chrome or the stock Android browser to navigate to the download page for the APK. You can also download on a PC and transfer the file.



- 6 Go to your app drawer and click Downloads; here you will find the file you just downloaded. Open the file and install the app. If you downloaded the APK file on your computer, the process is slightly different.



- 7 You will need to connect your Android device to a PC in USB mass-storage mode. Drag and drop the file onto your device and then, using a file manager such as Astro, you can locate the file on your device and install it.



## Risks of Sideloading

If you take precautions, the risk of installing apps from sources other than the Google Play Store is actually pretty minimal. Here are a few things to consider before sideloading.

**Untested Software** – Software which doesn't work as it should is probably the least of the possible risks when

sideloading apps onto your Android device. Be especially wary if paying for apps.

**Virus Infection** – The Google Play Store is pretty good at weeding out viruses hidden in apps, but you simply don't have that protection when sideloading. Ensure you have good anti-virus software.

**Malware or Spyware** – Although similar to a virus, malware or spyware is not generally as damaging. It is more likely to slow your device down than kill it. Again, security software is a must.





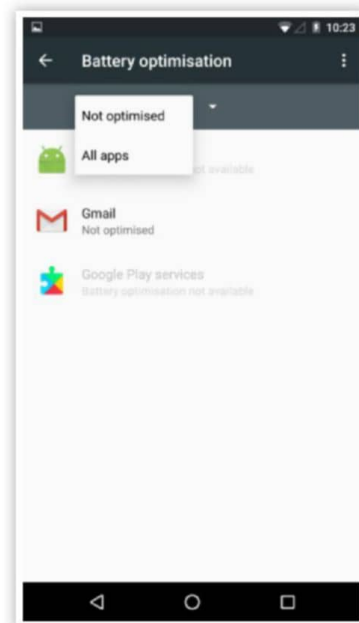
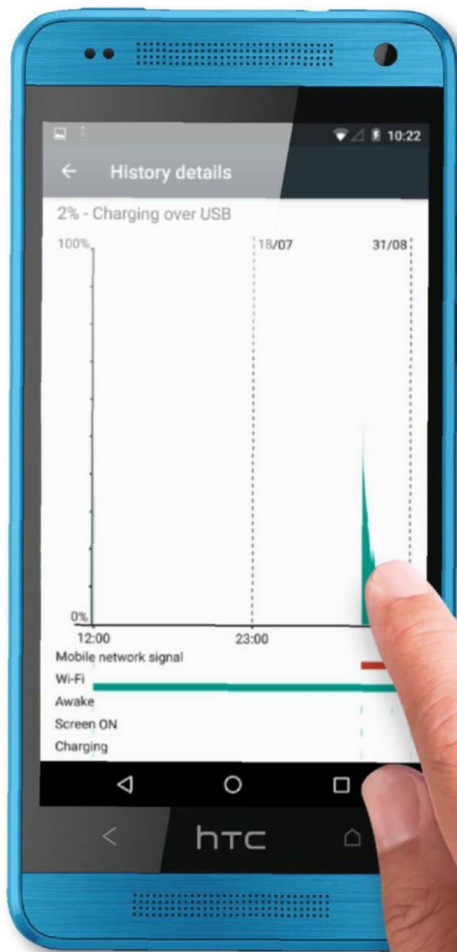
# Understanding Doze & App Standby

If you are running version 6.0 (Marshmallow) or later on your device, a feature called Doze is helping to optimise battery usage by putting apps into a sleep mode when it detects that the device isn't being used. Sometimes, this can mean that notifications or messages are slower to arrive on your device than you might like. You can, however, control which apps are Dozed.

## What is Doze?

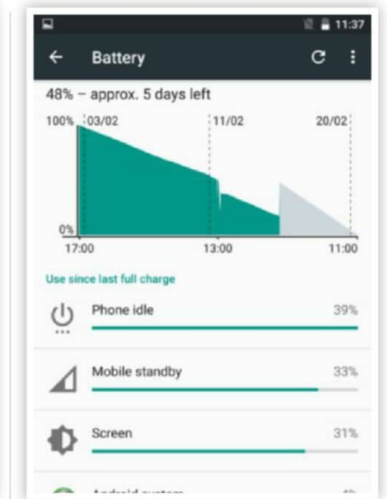
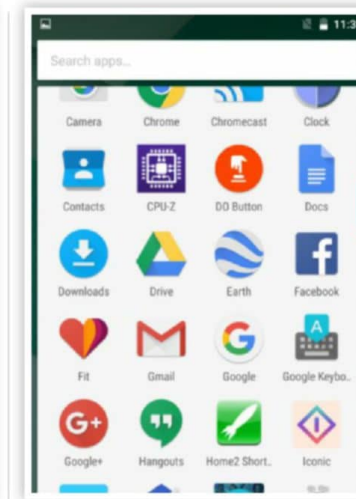
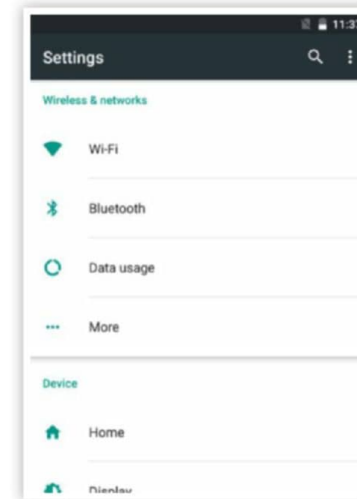
Doze is best explained as an automatic battery-saving mode. If the user leaves the device unplugged and stationary for a period of time, with the screen off, the device enters Doze mode. In Doze mode, the system attempts to conserve battery by restricting app access to network and CPU-intensive services. It also prevents apps from accessing the network and defers their jobs, syncs, and standard alarms.

Periodically, the system exits Doze for a brief time to let apps complete their deferred activities. During this "maintenance" window, the system runs all pending syncs, jobs, and alarms, and lets apps access the network. At the conclusion of each maintenance window, the system again enters Doze, suspending network access and deferring jobs, syncs, and alarms. Over time, the system automatically reduces the frequency of these maintenance windows, helping to reduce battery consumption in cases of longer-term inactivity when the device is not connected to a charger. As soon as the user wakes the device by moving it, turning on the screen, or connecting a charger, the system exits Doze and all apps return to normal activity.



## Controlling Which Apps Doze

Doze is only available to devices running Android 6.0 and later. There are other battery optimisation options available for older devices.



- Doze might, at first, seem like a feature which does not require, or indeed allow, your intervention to work properly. There is no specific "Doze" option in the settings, nor is there an app shortcut added to the home screen after updating to Marshmallow. Doze can, however, be configured.
- Your first task is to identify those apps which are being dozed, but which you want to be added to the whitelist (those apps which are ignored by Doze). These will probably be communication apps such as Gmail or Messenger, but specific requirements will vary between users.
- Open the main settings app and scroll down to find the "Battery" section. This shows you what apps or services are using the most battery power, and is a useful screen in its own right. But for the moment, we can ignore the main Battery info screen and tap the Menu button.
- Choose "Battery Optimisation" from the overflow menu and you will see a short list of apps which are not currently optimised (that is, not currently being Dozed). This list may not have any apps in it at all when you first view it. Tap the "Not Optimised" header and select "All Apps".
- Scroll down to find the apps you want to remove from the "Doze" list and add to the whitelist. When you find each one, tap the name in the list and then select "Don't Optimise" from the menu that pops up. Then tap "Done". You can do this for as many apps as you wish.
- To reverse the process, navigate back to the Battery Optimisation screen and tap the app in the list. Select "Optimise" from the menu. The app will now be "Dozed" when your device is not being used. Keep a close eye on battery usage for a few days if you remove a lot of apps from Doze.





## Disclaimer – Read This First!

The Complete Android Manual does not wish, in any way, to encourage you to root your phone. This guide is for information purposes only and any decision to root your phone is your own. If you do decide to root your phone, you do so at your own risk. Rooting can give a lot of benefits, but if you are happy with the way your phone behaves un-rooted, then our advice is: Leave it alone!

# Android Rooting Guide

You may have heard about Jailbreaking on the iPhone, well rooting is a similar process. Rooting gives the user privileged access, or root access, to the inner workings of the Android OS. This allows you to bypass some of the limitations software and hardware developers put on their products. A user with a rooted phone will typically be able to install custom software (called ROMs), increase performance by essentially overclocking the processor, and upgrade to a newer version of the Android OS even if the handset is locked to an older version.

## Taking Root

► The first phone to be rooted was actually the first commercially available Android phone, the T-Mobile G1 or HTC Dream. Clever members of the new Android community quickly realised that anything typed on the keyboard was interpreted as a command in the root shell. Although Google released a patch to fix this exploit, a signed image of the exploitable firmware was leaked and rooting Android continued to be explored.

## Rooting?

► The term rooting comes from the fact that Android is based on Linux and the most privileged user on any Linux operating system is called Root.

## Is Rooting Legal?

► The short answer to that question is... Yes and No! Up until the last quarter of 2012, smartphones and tablets (and other mobile devices) were exempt from the law which made it illegal to circumvent security controls that are intended to stop piracy and copyright violations. Things have now changed and rooting is now, thanks to a new ruling by the US Library of Congress, a bit of a legal nightmare.

Whilst it is still legal (in the US anyway) to Root a smartphone you already own, it is illegal to do the same to your Android tablet. This is despite the fact that the software could be almost identical for both. To further confuse matters, although it is still legal to root your smartphone, it is now illegal to Unlock it (Unlocking means to circumvent the controls that stop a phone bought from one carrier being used on a different carrier network). But, and this is quite a big but, only if you bought the phone after the 26th of January 2013. If you bought your phone after this date, you must approach your carrier to get it unlocked.

So why are phones exempt from this ruling whilst tablets aren't? It all comes down to the fact that tablets are not as easily classified as smartphones. The term Tablet is used to describe e-readers, iPads, Android devices and sometimes laptops, as well as other mobile devices. The documents explaining the ruling for the DMCA show that it "lacked a sufficient basis to develop an appropriate definition for the "tablet" category of devices, a necessary predicate to extending the exemption beyond smartphones." You can (and should) read the full ruling at <https://www.federalregister.gov>.

It is hoped by many that the next time the Digital Millennium Copyright Act is reviewed, tablets (as well as games consoles) will be added to the exemption and rooting your tablet will once again be allowed. Although this is a very difficult law to uphold as far as consumers are concerned, we would certainly advise that you do not attempt to root your Android tablet at all. Furthermore, we would also recommend that you do not root your Android smartphone if you got it after the 26th of January 2013.

Although we show what is possible to do on a rooted device, we will not be showing you how to jailbreak a tablet or phone. Nor will we be showing you how to unlock one. It is up to you to find out if the laws mentioned above apply to your country of residence (it is possible that it may not), and it is up to you to decide whether you want to follow those laws. We recommend that you do, and keep your fingers crossed that tablets are added to the exemption soon.

## Possible Benefits of Rooting

Rooting your phone can potentially have both benefits and drawbacks. Let's take a look at some of the possible benefits first.

### Custom Software (ROMs)

► The ability to install custom ROMs onto your Android device is really the main advantage of rooting. The first custom ROMs for Android consisted of minor tweaks to the system software but now, just a few years later, custom ROMs can be used to almost completely alter how your phone looks, behaves and performs. You can get ROMs containing new UIs, the latest version of Android or utilities for overclocking the CPU. Essentially, a custom ROM is a version of the OS, including the Kernel, services and apps which make it work, but altered in some way to add extra benefits or with certain functions unlocked/added.

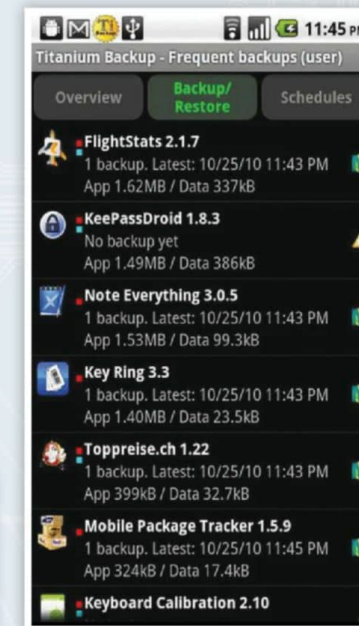
In some cases, Custom ROMs don't add to the original OS, but actually take things out like superfluous apps and services which might be slowing the OS down or using up memory that could be better used by something else. One of the most popular ROMs is CyanogenMod. Installing Custom ROMs is not the same thing as rooting your device. The ability to install ROMs comes from the act of rooting.

### Full Control

► Rooting your device gives you full control over what software and services you have on it. You are no longer stuck with carrier-sponsored apps that you might never use or ever want. If you don't need it, you can just remove it. Rooting also gives you access to a much wider range of customisation. You can alter almost any aspect of a theme, without changing the theme itself. Like the theme but hate the style of the keyboard? Change it! Bored of the icons? Download hundreds more for free.

### Full Backup

► Android 2.2 (Froyo) introduced the option to back up apps to the SD Card, but the option still has to be enabled by app developers. Rooting your device lets you install Custom ROMs with the inbuilt ability to back up any app, no matter what options the developer decided to include. You can also back up the whole system to the SD Card, similar to the way you can create an image of your PC hard drive if you ever need to restore from a major problem. This means that you can try out different ROMs, and then just restore to your saved version if you don't like the new one. This complete control over what you do with your Android device is the key to why rooting is becoming so popular. You will need an app such as ROM Manager installed on your rooted device before you can create an image of the system (unless you want to do some messing around with the command line).



## Possible Drawbacks of Rooting

So far, rooting your device may be sounding like a no-brainer. However, it is important to understand that there are downsides to rooting and it certainly isn't going to be an option for everyone.

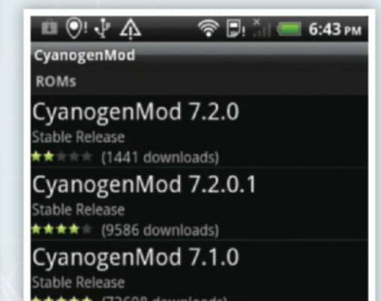
### Bricking Your Android Device

► The term bricking or bricked has been applied to electrical devices for a while now and simply means that the device cannot function in any capacity (and is therefore about as good as its specified use as a brick). Bricking your device whilst trying to root it or install a new custom ROM is a real possibility.

Your Android device is a complicated bit of kit (for most people anyway), as is the software that runs on it. If you are not 100% sure that a) you understand what you are doing and b) can afford to lose the cost of a new device, then rooting may not be for you.

The most common causes of a bricked device are often things that could be easily avoided. The battery running out in the middle of installing a new ROM is one such common mistake. The ROM only partly installs and then it is pretty hard to get the device to do anything once you have charged it (it may not even charge.) Another common error is to assume that every custom ROM works on every Android device. Even the most popular ROM, CyanogenMod is limited in the number of devices it will work on.

Playing with the system software is inherently risky for non-programmers, but there are certainly several things you can do to make the risk smaller. If you decide you want to have a go at rooting your device, make sure you read as much as you can about it first, and make sure that the information is specific to your model of device. Rooting also gives you access to a much wider range of customisation. You can alter almost any aspect of a theme, without changing the theme itself. Like the theme but hate the style of the keyboard? Change it! Bored of the icons? Download hundreds more for free.





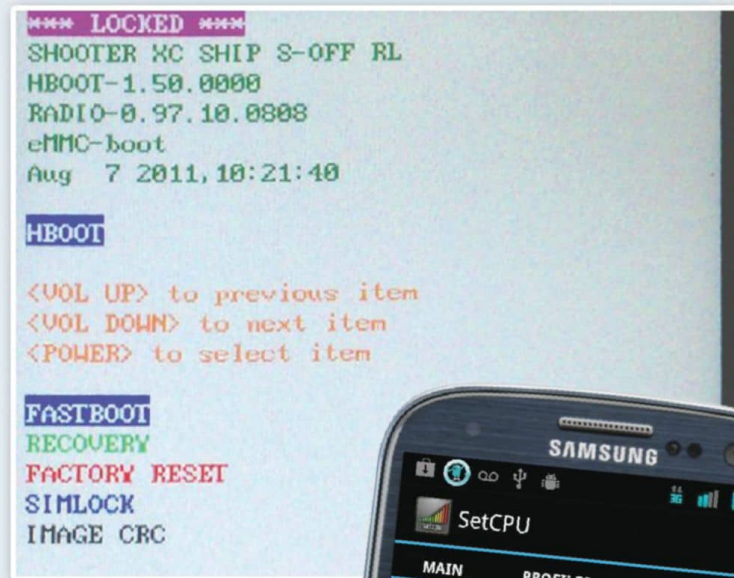


## What is Fastboot?

► Fastboot is a small tool that comes with the Android SDK (software developer kit) that can be used to re-flash partitions on your device. It is an alternative to the recovery mode for doing installations and updates. Because Fastboot mode can start on your device even before Android loads (and can even run when Android isn't installed at all), Fastboot mode is useful for updating the firmware quickly, without having to use a recovery mode. In fact, it's frequently the preferred way to initially install the recovery image on many devices. Fastboot can also be used for developer operations like unlocking the bootloader of Google's Nexus devices. Not all devices support Fastboot, but many do.

## Booting into HBOOT

► Several rooting methods require you to boot into HBOOT (HTC devices only). To do this, turn your device off, hold Volume Down and then press and hold the Power button. After a few seconds, the device should boot into a white screen with a bit of text on it. At the top is the HBOOT version (which you may need to know) and other information. If holding Volume and Power doesn't work, try holding the Back button and then holding Power. Once you are on the HBOOT screen, you can move the cursor using the Volume buttons and select using the Power button. Choose Reboot to boot back into the home screen, what the CPU can handle. Read as much as you can before making any major changes and stick to overclocking apps which allow you to set fail-safe limits based on temperature.



## Security

► Because you will be installing software from unknown sources, there is always the possibility that something nasty could be included in the software package. You could be giving someone (via their ROM or app) Superuser rights to your device. This means that they could access EVERYTHING and ANYTHING on your device. One way to avoid this is to stick to well-known ROMs or apps and research things properly before you install them. Check Android Rooting forums and see if the software you are planning to install has been recommended or if there are examples of other users having problems.

## Hardware Damage

► Once your device is rooted there are several ways to overclock the CPU to gain more speed and better performance. Whilst this is fine if you stick within the workable limits of the hardware, if you do not set fail-safe limits you run the risk of burning out the processor and killing your lovely smartphone.

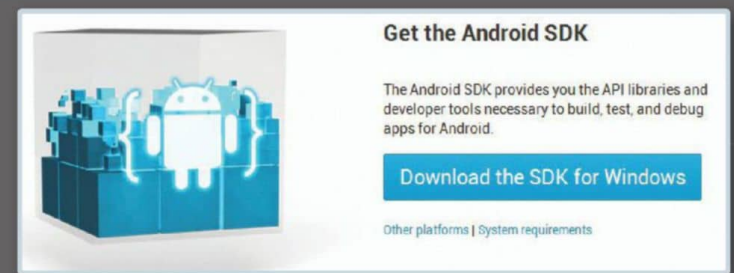
Again, if you decide to overclock your rooted device, check first to see what the CPU can handle. Read as much as you can before making any major changes and stick to overclocking apps which allow you to set fail-safe limits based on temperature.

## JDK and SDK

► Most rooting methods will require you to have the Java JDK and Android SDK installed on your computer. You don't need to completely understand them, just make sure they are installed correctly on your computer (install the JDK first). There are installation instructions available at the download pages. You can download these from:

JDK - <http://www.oracle.com/technetwork/java/javase/downloads/index.html>

SDK - <http://developer.android.com/sdk/index.html>



## To Root or Not to Root?

► As you can see, there are some possible advantages to rooting your device, as well as some fatal (for your device at least) things that can go wrong. If you are inclined to do this sort of thing with your expensive technology, then anything we can say will probably not persuade you either way. As stated at the start of this guide, we do not condone rooting, we simply want you to understand more about the process and be able to make a more informed choice. Please remember that whilst rooting an Android phone bought before the 26th of January 2013 is still allowed, doing anything that might be considered unlocking on a phone bought after that date is not, so don't do it. Rooting or unlocking Android tablets (or indeed any tablet) is very much illegal, and has been since the last quarter of 2012

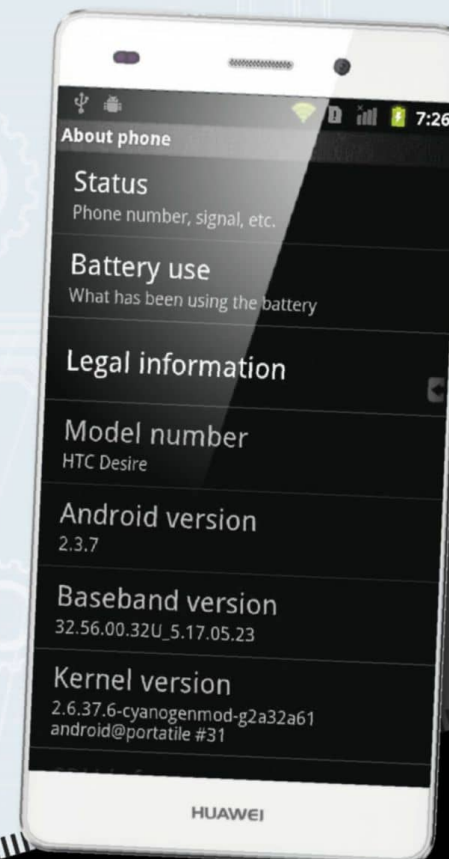
so again will not be endorsed by this publication! If you wish to have any Android device unlocked, so it can be used on another carrier network, you must speak to your carrier ONLY!

## Before You Root

► If you are careful and follow rooting instructions, there is little danger to your device hardware or contents. However, it is always a good idea to back up as much of your data as possible to your Google account and make sure that there is nothing on your phone that you couldn't live without if it was lost. Ideally, you should restore your device to factory default before rooting, as this will help to ensure that things go smoothly and none of the apps or data you already have installed conflict with the root process. The next thing you need to do is research the root methods available for your model of device. Unlike the iPhone, Android devices vary greatly, both in terms of operating system and hardware. Using the wrong rooting method on your device is a sure way to make trouble for yourself. Generally, the older the phone, the more likely there will be a stable and reliable root method.

## Disclaimer

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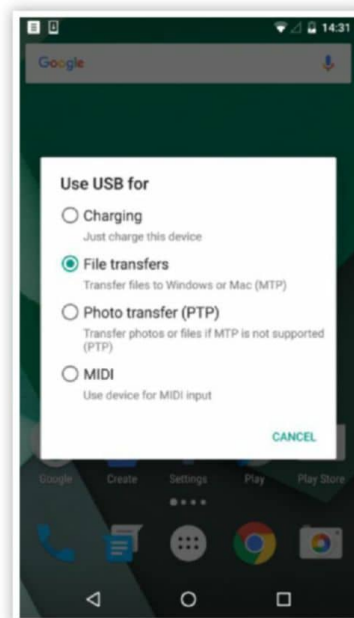


# Using a Root Toolkit

Rooting an Android device used to require the user to manually enter codes into the Android Debug Bridge software to force bootloader to unlock, to flash the internal memory with a new custom ROM and even to install the Superuser software. Then came tools to root individual devices, which made things easier. Now we have access to universal root toolkits, like the one from Skipsoft.

## Skipsoft Toolkit

There are several different root toolkits available, and no single one works for every Android device. Skipsoft's toolkit works with a wide variety of the most popular devices.



- 1 The first thing to do is connect your Android device to your computer and to make sure all of the required drivers are installed. If your computer doesn't detect your device as a new USB connection, the toolkit can even help there too.



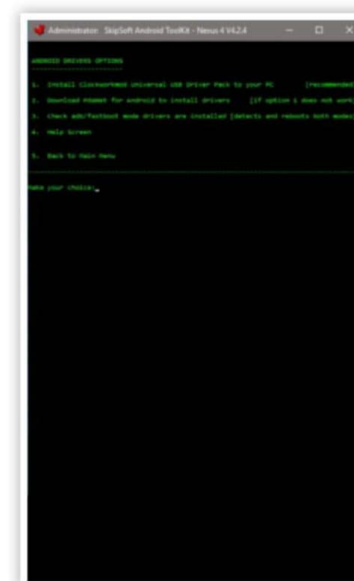
- 2 Open the Skipsoft toolkit (download from <http://www.skipsoft.net/download/uat-v152/>) and from the initial screen, choose the relevant option by typing the code shown. For example, to install USB drivers for connect your device, type "DR".



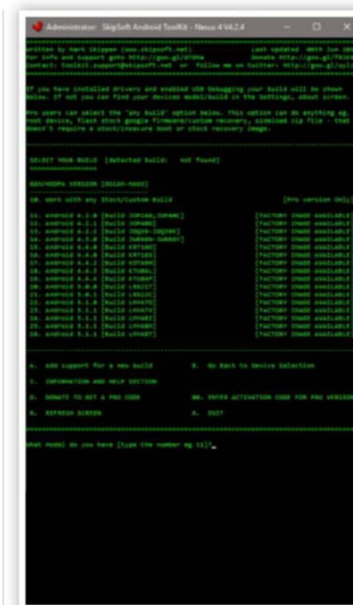
- 3 Follow any further instructions to complete the previous step. You should then return to the initial menu. If you can see the name of your device, type the code next to it to see your available options. If you can't see your device, type "99" to see basic options.



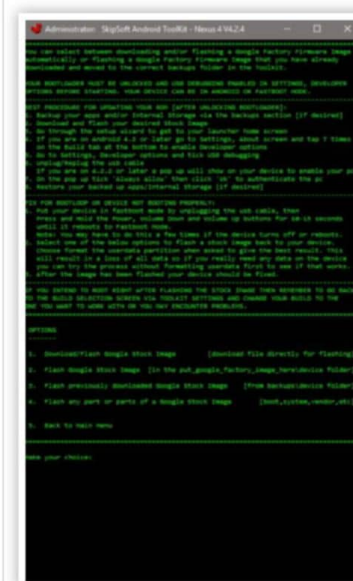
- 4 The toolkit will now download the basic files it needs to communicate with your device, as well as any updates to the toolkit that are available. When this is complete, press any key on your computer to continue with the operation and start rooting.



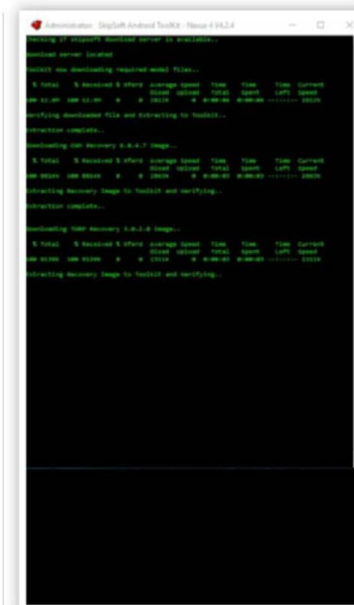
- 7 At the top of this menu, your device name should be shown. If it isn't, you will again need to try to install them (option 1 in this menu). If it is shown, you can unlock the bootloader (option 3) and then root your device (option 4).



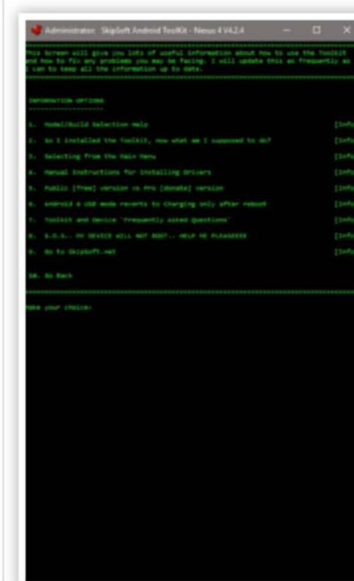
- 5 You now need to choose the version of Android your device is running currently. If you are not sure, you can check in the Settings > About Device menu on your device. As before, type the code number in the toolkit which matches your OS version.



- 8 If your device is already rooted, or perhaps stuck in a recovery mode loop, you can unroot it and restore a stock image. Flashing a stock image (ROM) is option 9, and option 5 will lead you through recovering from a recovery mode boot loop.



- 6 The toolkit will download the specific files needed for your particular device and OS version (previous downloads were general/basic files), and then load your menu of options. These include unlocking the bootloader, flashing recovery and installing files.



- 9 The Skipsoft toolkit is fairly easy to use, as long as you read all of the instructions. You will normally be offered chance to back out of any operation if you make a mistake. However, if you are struggling, there is a good help menu (option 27).



# Android Rooting Terms

Here are some of the most common terms you may come across as you research how to root an Android phone or tablet. Understanding the process and what you are adding to your device is important as it will help you to avoid problems, and a big part of that is being able to spot important terms in the instructions you follow.

## ADB

▶ ADB or Android Debug Bridge, is a command line tool installed on your system that allows the computer to communicate with an Android device plugged into it. The ADB is installed as part of the Android SDK and is used by most root tools during the process. Unless the root method you have chosen tells you to run ADB commands, you really do not need to worry too much about it, as long as you have the SDK installed.

## Android SDK

▶ The Android SDK provides the API libraries and developer tools necessary to build, test and debug apps for Android. It also includes various tools such as Android Debug Bridge needed for many rooting methods.

## APK

▶ An APK is the file name for an Android application that can be installed on your phone. All apps downloaded from the Google Play store come as APK files. APKs can also be sideloaded by downloading them from outside the Google Play store and placing them on the phones internal or external memory.

## AOSP

▶ The Android Open Source Project. When you hear about Android being "open source," this is what we're talking about. It's a repository of the code released by Google, which can be downloaded and compiled by anyone.

## Bootloader

▶ The Bootloader of your phone is the first layer of software that runs all of the code required to start up the operating system. Without unlocking the bootloader, you will not be able to root your phone; unlocking the bootloader does not root the phone, it only allows it to be rooted.

## Boot loop

▶ When your system recycles over and over without entering the main OS, your system is stuck in a boot loop. This may happen if you do not follow instructions. At other times, boot loops are caused by defects in the software code.

## Brick

▶ To brick your phone is to break it during flashing or other rooting processes. There is always a small risk with flashing and if your phone gets to the point of not functioning, you have bricked it. The risk however, is very small and more often than not a bricked phone is one that turns on but does not boot properly, and this is normally a solvable problem.

## BusyBox

▶ Android, being based on Linux and Unix, offers a certain amount of UNIX commands. BusyBox will implement more commands that are necessary for some root apps to work properly.

## Cache/Dalvik cache

▶ The cache is a buffer memory where frequently used files are stored for faster retrieval. The Dalvik cache is a directory tree for all programs. The successor of Dalvik is Android Runtime (ART), which uses the same bytecode and .dex files.

## Deodex

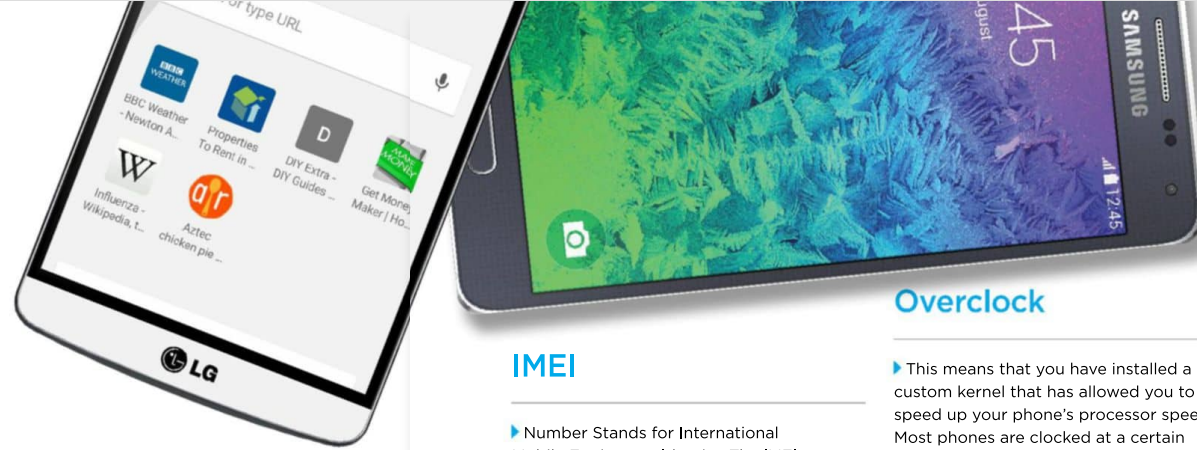
▶ This term is most often seen on a custom ROM's list of features. When a ROM has been deodexed, it means that its apps have been prepared for modification. Deodexed ROMs have apps that have been repackaged in a certain way.

## Fastboot

▶ Fastboot is very similar to ADB, but is a special mode you must boot your phone into (while connected to a computer via USB) that allows a variety of commands sent through the command prompt.

## Flash or Flashing

▶ To flash your device simply means to install something, whether that is a ROM, a kernel or something else. You may see this term used during the root process, e.g. you might be asked to flash a ZIP file, but mostly you will not.



## IMEI

▶ Number Stands for International Mobile Equipment Identity. The IMEI number is a unique identification number assigned to every phone. Sometimes needed during Root operations.

## Kang

▶ The term Kang is often used to describe a custom ROM that uses a large percentage of code created by another developer. This is not necessarily a bad thing but it can be a sign that there is only a minor change from the original.

## Kernel

▶ A kernel is the heart of an operating system and lets the hardware parts of the phone communicate with the software parts (apps, etc.). Android uses a customised Linux Kernel. All ROMs come with a kernel installed but you can install a third-party one if you like.

## Mod

▶ A mod is simply a modification made to the phone's software. This can include adding functionality or changing the visual layout of your phone, like moving the location of the clock to the centre of the notification bar, or inverting the colours in the SMS app.

## NAND partition

▶ NAND stands for Negated AND or NOT AND and describes the hard drive partition that stores all system relevant information like the bootloader, recovery mode and the kernel.

## Nandroid Backup

▶ This is simply a backup made with a custom recovery of the ROM and user data on the phone at the time the backup is made. It's like a snapshot of the software configuration.

## Overclock

▶ This means that you have installed a custom kernel that has allowed you to speed up your phone's processor speed. Most phones are clocked at a certain processor speed, i.e. 2.4 MHz, but if you overclock it, you are allowing your processor to push the limits by working at a higher speed. Overclocking will make your phone perform faster but often this comes at the expense of battery life.

## Radio/Baseband

▶ The Radio or Baseband is the firmware that controls the mobile network radio on your device (how your device connects to the Internet). Usually, updating to the latest version helps in improving mobile network strength and data speeds.

## Recovery

▶ Recovery software is what allows you to make backups, flash ROMs and make other system-level changes. Many root tools will install custom recovery software, usually ClockworkMod, that will give you much greater control over your phone. If a custom recovery is not installed by a root tool, you will need to make this the first thing you install after unlocking the Bootloader, and before you root.

## ROM

▶ A ROM, or custom ROM, is a modified version of the Android operating system. There are lots of different ROMs available to install, usually offering extra features and a modified design, but sometimes providing a simplified version of the OS. CyanogenMod is probably the most popular ROM currently available, although there are several other well-known ones available too, including Fresh, OpenDesire and Bugless Beast.

## Root or Rooting

▶ The term rooting means to gain root access to your phone, thereby having the opportunity to do things and run software that would otherwise be blocked. You can root your device either by installing a Superuser application or by flashing a custom ROM that has root access granted.

## RUU

▶ ROM Upgrade Utilities (HTC phones) are files that come direct from the manufacturer and they change the software on your phone. This is how handset manufacturers deliver OTA updates of the latest Android version. It is possible to find leaked RUU files, ready to be flashed to your phone, long before the update reaches your particular device.

## S-OFF

▶ HTC phones use a feature called Signature Verification in their bootloader. By default, your phone has S-ON meaning that it blocks you from flashing radio images. This is the code that manages your data, Wi-Fi and GPS connections. Rooting does not require S-OFF but many rooting tools will give it to you along with root access.

## Stock

▶ Stock Android means the Google-built version you'd find on Nexus devices, with no extra UI changes like HTC Sense or Samsung TouchWiz. Many ROMs are based on stock Android with some additions, like CyanogenMod, while others are based on the version that came with your phone.

## SuperUser

▶ This is a small utility that controls which apps have root permissions on your device. Without SuperUser or SuperSU flashed onto the device, it isn't rooted, even if you have unlocked the bootloader and flashed a custom recovery. It can be installed as a downloaded file from recovery mode. In computing, a Superuser is a special user account used for system administration.

## Underclock

▶ Underclocking does the exact opposite of overclocking. It makes your processor perform at a lower speed, slowing down perceived performance. It can help to increase battery life though. Underclocking may be required if the custom ROM you choose to install adds a significant load on the CPU.

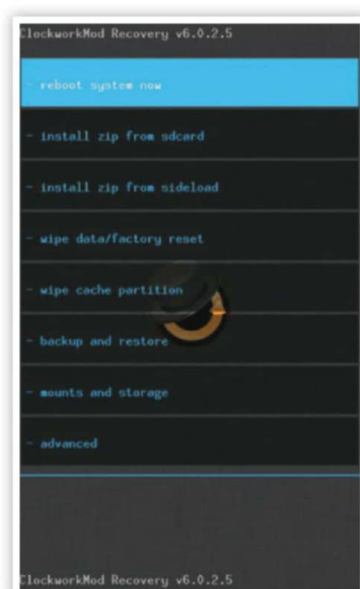






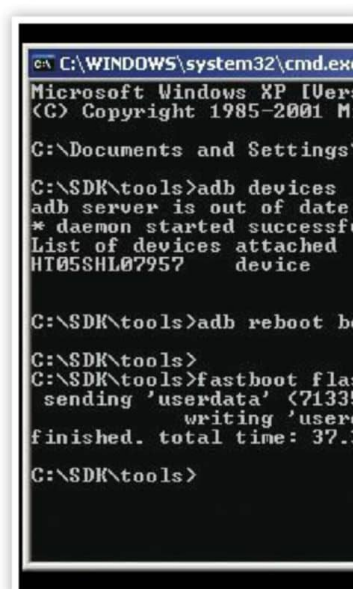
# Tips for After You Root

Before you start to install root-only apps on the Google Play Store, and before you move on to flashing a custom ROM, there are a few things you should do to help the process go smoothly. By taking these simple and relatively quick steps, you can help to ensure that you avoid potential problems later on your rooted device.



## 1. Install a Custom Recovery

Many of the guides available for rooting Android phones include advice on installing a custom recovery app as part of the process. But if you have used one of the increasingly popular rooting tools, this important element may not be added. A custom recovery (such as ClockWorkMod or CWM, and Team Win Recovery Project) replaces the standard recovery mode included with your phone, adding several very important options and features. With a custom recovery app in place you will be able to make a complete backup of your device (from apps and settings, to a backup of the OS itself). This is particularly important if you plan to install/flash custom ROMs such as CyanogenMod. And with a custom recovery app installed, terminally bricking your phone becomes a lot less likely.



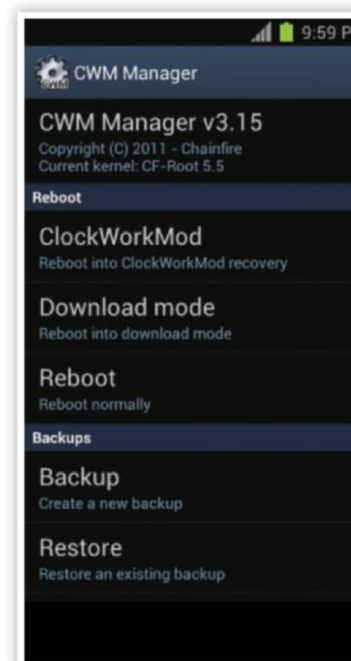
## 2. Get to Know ADB and Fastboot

You may never have even considered using the Command Prompt on your computer, but if you are going to root your phone, now is a good time to learn and understand some of the basic commands. From the simple black and white window that is the Command Prompt interface, you can flash a factory image to your (connected) device, as well as transfer other important files, all with a few simple commands. Fastboot is a command which allows you to access your device directly from a computer, without ever touching the phone screen. There are several very good guides online which cover how to set up and use Fastboot, both for flashing ROMs and for things like sideloading.



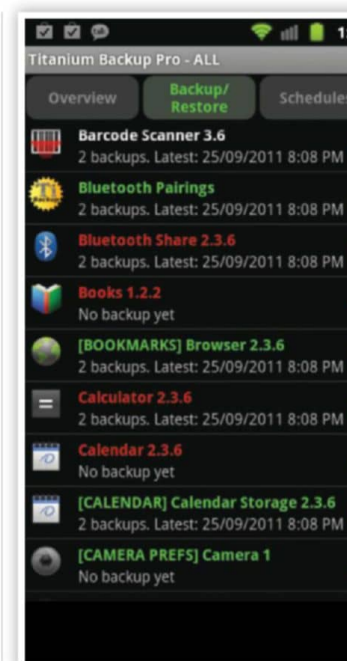
## 3. Learn How to Hard Reset

With many phones, the most reliable way to complete a full reset of the device is to pull the battery. However, not all Android devices support the battery pull method of resetting, either because the battery cannot be removed (Nexus 5 for example), or because the software doesn't allow it. Almost all phone manufacturers provide an emergency hard reset method on their devices, just in case. On some, such as the Nexus 4 and 5, you can force a hard reset by pressing and holding the power button for ten seconds. To find your hard reset method, just Google your phone's model and the phrase "hard reset" or "reset". Keep in mind that some manufacturers take "hard reset" to mean a factory reset.



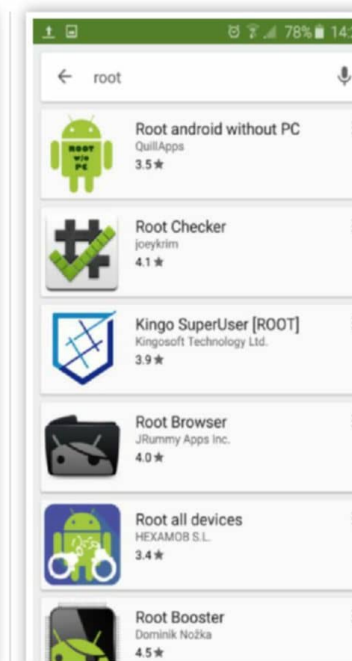
## 4. Create a System Backup

While viewing your custom recovery, you may have noticed the backup option. This provides a very easy way to create a full backup of your device which can then be used in the event that something major goes wrong. Boot into recovery and select the backup option. Choose all of the available partitions and select "backup". You can then use recovery mode to restore one or more of these partitions if needed. If you decide to install a new custom ROM, you can restore your apps using this method. It is often a lot easier than using a dedicated backup app like Titanium Backup to restore your apps.



## 5. Create a Full Nandroid Backup

Backing up your System and Data directories isn't a complete backup. Creating a full backup of your operating system also includes several other directories that the default options in most custom recovery apps don't select. Check everything when you make a backup. Make sure that you have enough room on your SD card to store the Nandroid backup of your device.



## 6. Search for Root Apps

Unlike Cydia for iOS, there is no separate place to go to find apps, tweaks and software for your rooted device. Instead, because Google is a lot more relaxed about rooting than Apple is about jailbreaking, you can simply search the Google Play Store. Searching for "Root" will display lots, assuming you don't have a specific app in mind.

## 7. Back Up Your Backup

Keeping a copy of your backup files on your device is a good idea. Keeping the **ONLY** copy of your backup files on your device is a **BAD** idea! When you have made a Nandroid backup, make sure that you also move a copy onto your computer. The easiest way to do this is to simply access your rooted device's internal storage from your PC and copy the entire Backups folder to your desktop. If you decide to install a new custom ROM, you can restore your apps using this method. It is often a lot easier than using a dedicated backup app like Titanium Backup to restore your apps.



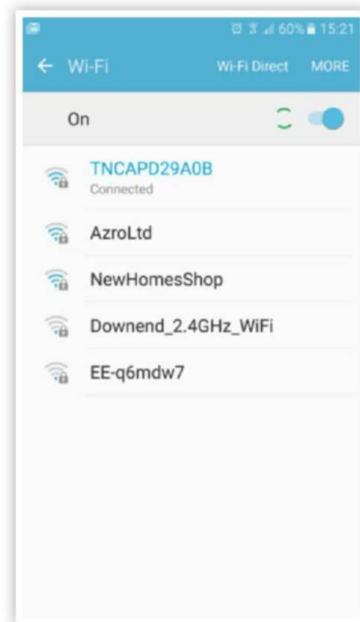


# Smart Home on a Budget

If you have deep pockets, it is now possible to completely transform your house into a Smart Home, with a single portable control system for everything from lights and music, to heating and security. These bespoke systems cost several thousand, and take a lot of work to install. However, if you are clever, and do some creating thinking, it is possible to create a smart home on a budget.

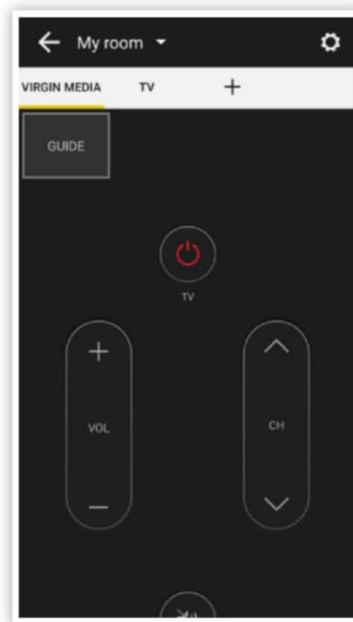
## Smart Home Essentials

If you want to add Smart Home features to your home, you will need to ensure a few essentials are in place first, aside from the Smart gadgets we will look at in a moment.



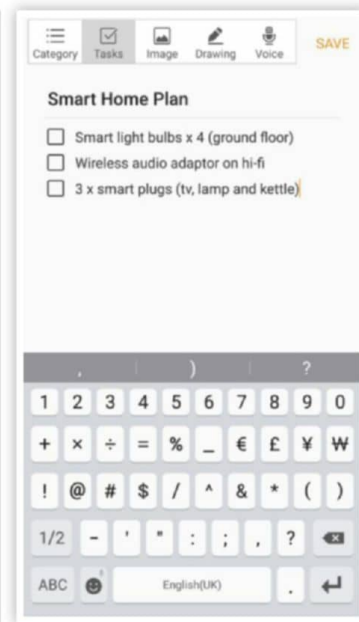
### 1 - Wi-Fi

▶ Almost without exception, Smart tools and gadgets will need to connect to a Wi-Fi network to work properly. This means you need to have a fairly strong and stable Wi-Fi network set up in your house. Without a Wireless network in place, a Smart Home is not possible.



### 2 - Controls

▶ The Smart Home gadgets we will be looking at here all require a companion controller app to be installed on a phone or tablet. This can be inconvenient to have on your current phone, so ideally use an old phone or tablet as a dedicated controller (remove anything not for the Smart Home).



### 3 - A Plan

▶ There are limitations with this budget Smart Home setup. For example, it is unlikely that you will be able to replace every lightbulb with a smart lightbulb and control all of them from a single app. It is therefore important to have a plan as to what your priorities are.



## Smart Home Gadgets

Let's take a look at some of the many Smart Home gadgets available, to hopefully give you ideas for your own budget Smart Home.



### Awox SmartLED 7w Bulb

Price: From £19.99 \$16.49 €19.99

[www.mobilefun.co.uk/](http://www.mobilefun.co.uk/)

▶ Perhaps the most simple Smart Home tech, these smart bulbs are affordable, reliable and can be set up to be controlled individually or as a group from a single easy-to-use app. You can control both the brightness and the colour of the bulb wirelessly.



### Perfect Bake Smart Baking

Price: From £44.99 \$48.49 €49.99

[www.mobilefun.co.uk/](http://www.mobilefun.co.uk/)

▶ Perfect Bake includes everything you need to achieve this, creating delicious cookies, muffins and all kinds of tantalising snacks and treats that will make your mouth water. Perfect Bake does all the measuring for you, taking any of the complication away and helping you become a master chef.



### D-Link Smart Plug

Price: From £24.99 \$29.99 €29.99

[www.mobilefun.co.uk/](http://www.mobilefun.co.uk/)

▶ The D-Link Home Smart Plug lets you turn electronic devices on or off from anywhere inside or outside your home. The smart mains adapter controls your devices through an internet connection to provide wireless control for your TVs, heaters and much more.



### Spigen Pan & Tilt HD Camera

Price: From £75.00 \$80.99 €79.99

[www.mobilefun.co.uk/](http://www.mobilefun.co.uk/)

▶ Monitor your home from anywhere with the Wi-Fi enabled HD Camera from Spigen. Featuring two-way audio, night vision, pan and tilt controls, you can be assured of seeing the whole picture no matter what the time of day. 720P HD video monitoring with IR-Cut provides a crystal clear picture.



### Avantree Saturn

Price: From £39.99 \$43.49 €44.99

[www.mobilefun.co.uk/](http://www.mobilefun.co.uk/)

▶ The Avantree Saturn is both a Bluetooth receiver and transmitter allowing you to connect Bluetooth music devices to non-Bluetooth speakers or vice-versa. This means you can use your old-school CD player with your latest Bluetooth speakers and because Avantree have used the latest 'aptX' decoder the music is HD quality.



### Samsung SmartThings Starter Kit

Price: From £199.99 \$199.99 €199.99

[www.mobilefun.co.uk/](http://www.mobilefun.co.uk/)

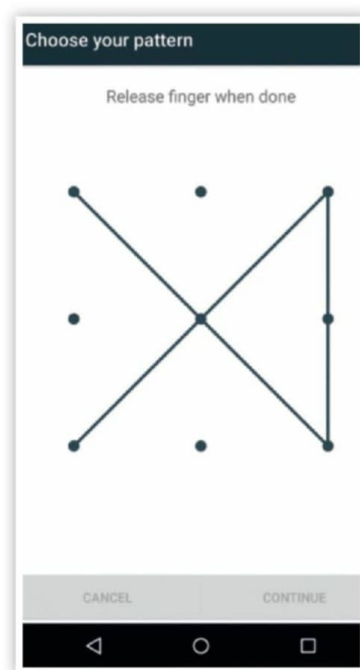
▶ The SmartThings Starter Kit lets you monitor, control and secure your home from anywhere. Including in the Starter Kit are a number of devices from the Samsung SmartThings range including the Hub, Motion Sensor, Multi Sensor,





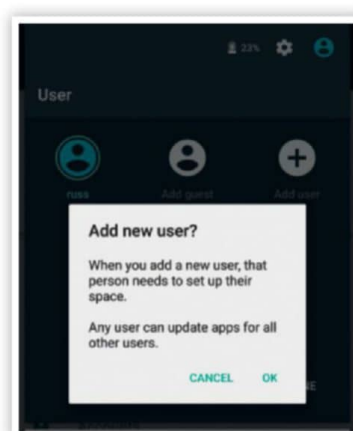
# 10 Android Security Tips

Gone are the days when your phone was just your phone. Now we are using our Android phones more often to store passwords, banking details, emails and other valuable information. Before you even begin adding this sort of information to your phone, you need to think about mobile security.



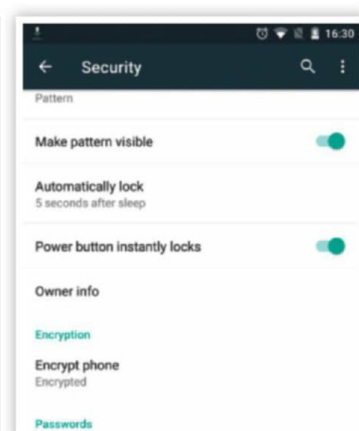
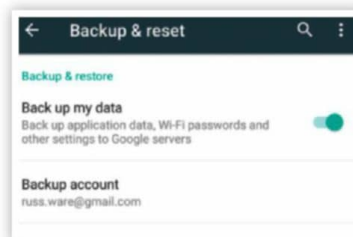
## 1. Add a Screen Lock

It has probably been said to you before, but setting up a screen lock pattern, password or PIN is an essential security step; one which every user should make a priority as soon as their device is set up. PIN and password locks are the most secure option, but a pattern lock generally offers faster access to your device and is easier to remember for most users. If you're using a pattern lock, at least make it complicated enough that it can't be easily guessed.



## 2. Set Up User Profiles

If your device is to be shared with other members of your family, take advantage of the User Profile option and give everyone their own secure area. Each user gets to have their own email account, apps and photo store, so your privacy (as well as theirs) is preserved. If you are just letting a friend or colleague use your device for a few minutes, set up a Guest Profile instead. This provides a short-term, secure account for the guest to use, without giving access to your private data.

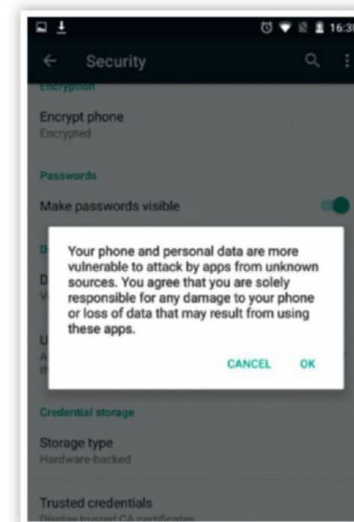


## 3. Encrypt Your Data

Encrypting the data on your device adds an extra layer of protection if your phone or tablet is lost or stolen. Encryption stores your data in a form that can only be read if you have the right credentials. You can encrypt all the data on your Android device, including your account data, app data, music and other media, and downloaded information. You can add encryption via the Security menu in Settings. On devices running Lollipop, you will be asked if you want to add an additional sign-in on boot when setting a screen lock.

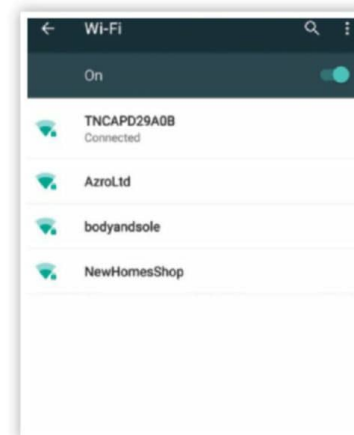
## 4. Back Up Regularly

Regular backups should definitely be a part of your Android security setup. While having current backups doesn't actually make your device more secure, it does make losing or breaking your phone much easier to recover from. Google can easily be set to create automatic backups in Settings > Backup my Account.



## 5. Let Google Verify Apps

All of the apps available on the Google Play Store have been checked and verified by Google. It is possible, however, to install apps from sources other than the official store, and these apps can contain harmful software. If you install apps from other sources, you can turn on app verification to make sure the apps you install are scanned for malware. Open Settings > Security and turn on Scan Device for Security Threats.



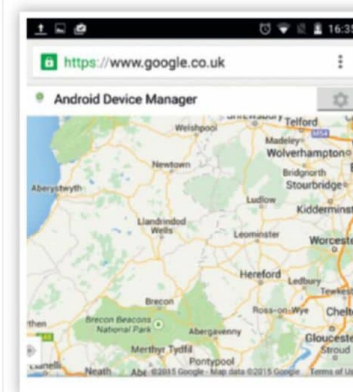
## 8. Avoid Unsecured Networks

Never join an unsecured network. This is especially true when doing business with your smartphone or tablet, but it should really be the general rule for any mobile devices. If you often work in coffee shops and restaurants, and need to connect to the Internet, only use those networks with a password. If you do have to work on a wireless network with no password, make sure you don't transmit sensitive data.



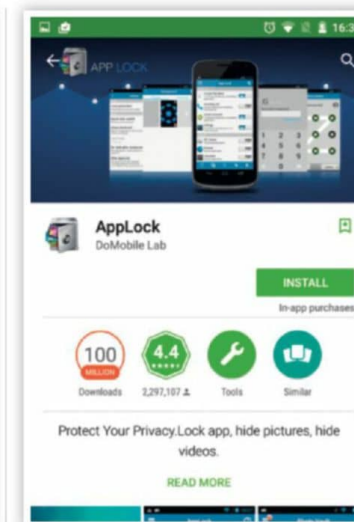
## 6. Install a Security App

Although Android devices provide lots of security tools right out of the box, it is still a good idea to install a reputable third-party security or anti-virus app such as 360 Security, Avast Antivirus & Security or Lookout Mobile Security. Many of these not only allow you to scan for viruses and malware, but also include real-time browser scans and performance-boosting tools. It is worth trying out a few to see which one works best for you.



## 9. Enable Android Device Manager

Android Device Manager comprises a set of tools which you can access through your computer browser. If you lose your Android device, you can use Android Device Manager to show its location using GPS, make it ring at full volume, lock it remotely, and wipe it remotely. Some devices will have ADM automatically enabled, while others will require you to enable it in the Security Settings. Once enabled, you can access ADM on any browser at [www.google.com/android/devicemanager](http://www.google.com/android/devicemanager).



## 7. Lock Your Apps

Locking individual apps is a secondary layer of security to prevent anyone from using your lost device if they have managed to bypass your locked Android. You can use a free app like App Lock for this purpose. The idea here is not to lock every single app in your device; just the data-sensitive ones like your Email apps or file managers. Some devices include a locked area which can be used for this purpose without installing extra software.

## 10. Keep it Close

The best way to keep your device safe is to keep it close. You wouldn't leave your wallet or purse on the table when in a café or bar, so don't do it with your phone. When you aren't using it, put it away in your pocket or bag, and make sure you know where it is at all times if you are in a busy place. It is easy to see your phone as a cheap, almost disposable item, largely due to carrier deals and yearly upgrades, but remember that replacing your device mid-contract can be expensive.



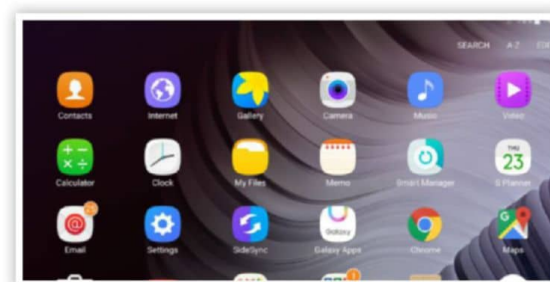


# Clean Up with Smart Manager

Smart Manager is a fairly new tool from Samsung, pre-installed on many new devices and available as a download on the Galaxy App store if not. It combines several tools and utilities into a single app interface, making it easy to quickly check things like battery level and usage, storage capacity remaining and amount of RAM being used. Like similar third-party apps (CleanMaster etc.) it provides both detailed information and one touch optimisation.

## App Management

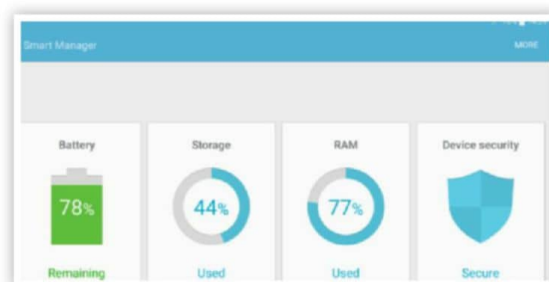
Smart Manager is a very useful tool, or collection of tools, which helps you keep your device running faster and more smoothly at the touch of a button.



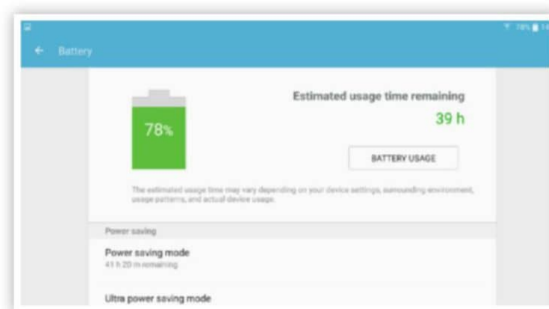
- 1 ▶ Smart Manager can be found in the main app drawer of your Samsung Galaxy device. As mentioned if it isn't pre-installed you should be able to download and install it through the Galaxy Apps store. If you are using a Galaxy S6, Galaxy S6 Edge, Galaxy Tab S2 or Tab S, you already have it.



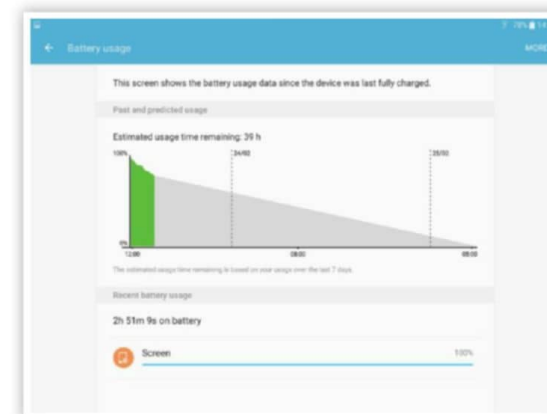
- 3 ▶ Each of the sections, when tapped, leads to a new screen showing more detailed information and usually more optimisation options and advice. You can watch in real time as the battery drains or the RAM is used by background apps and services (if you have nothing better to do...).



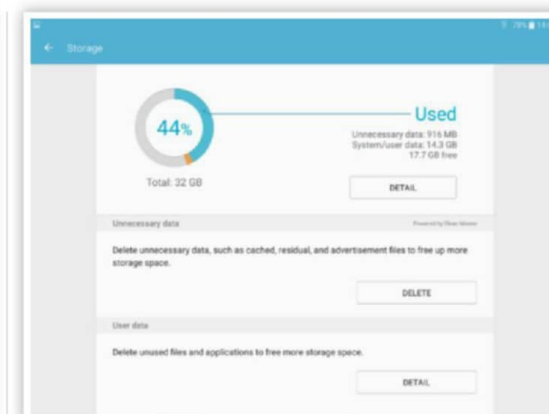
- 2 ▶ Tap the icon to open Smart Manager and you will see a fairly simple interface. The four main areas of the app are: Battery Remaining, Storage Used, RAM Used and Device Security. At the bottom of the screen you will see a button labelled "Clean All" which allows for quick device optimisation.



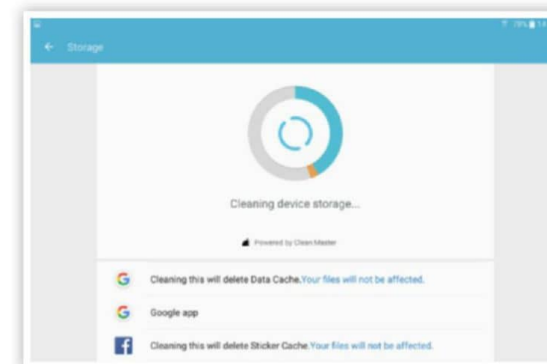
- 4 ▶ Tap the Battery section to see more details about battery usage. The top section of the next screen shows current battery percentage level on the left and estimated usage time remaining on the right. Estimated usage time remaining is based on an estimate and will be affected by heavy use.



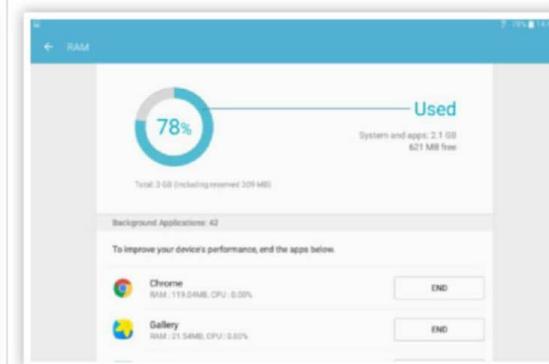
- 5 ▶ Tap the "Battery Usage" button to see even more detail, including which apps or services are draining power. On this second new screen you can even tap the battery users and see advice on how to reduce usage. Go back and if App Optimisation is switched on, the number being optimised is shown.



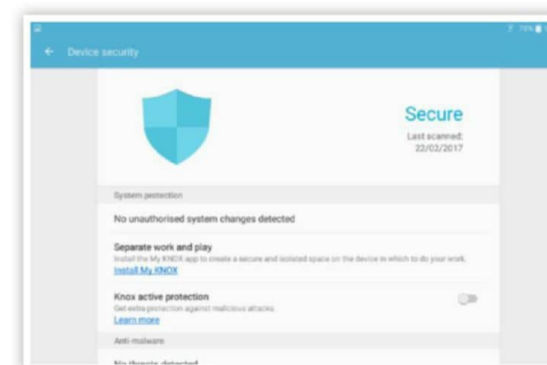
- 6 ▶ Go back to the main screen and tap the Storage section. The percentage readout will update to show the current amount of used and free internal storage. You can tap the "Detail" button and your storage will be shown as a bar graph, split into various categories including Available Space and System Memory.



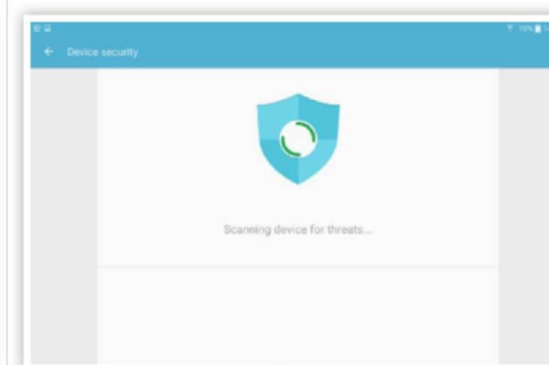
- 7 ▶ Go back to the Storage screen and you will see a "Delete" button. Tap this to quickly delete unnecessary data, including residual and advertising files. Depending on your device usage this could clean out several hundred MB of unwanted data and files. The full amount is shown when deleted.



- 8 ▶ Go back and tap the RAM section. You can see how much RAM (Random Access Memory) is being used at this moment. RAM is important to the smooth running of your device as it helps keep apps and services ready to use. Tap "End" next to any apps you don't need running to free up RAM.



- 9 ▶ The First time you use Smart Manager, Device Security may not be activated. Tap the Security section and agree to the terms to activate it; you can also do this through Settings. Hopefully it will now show your device is "Secure". You can scan the device for threats using the button at the bottom.



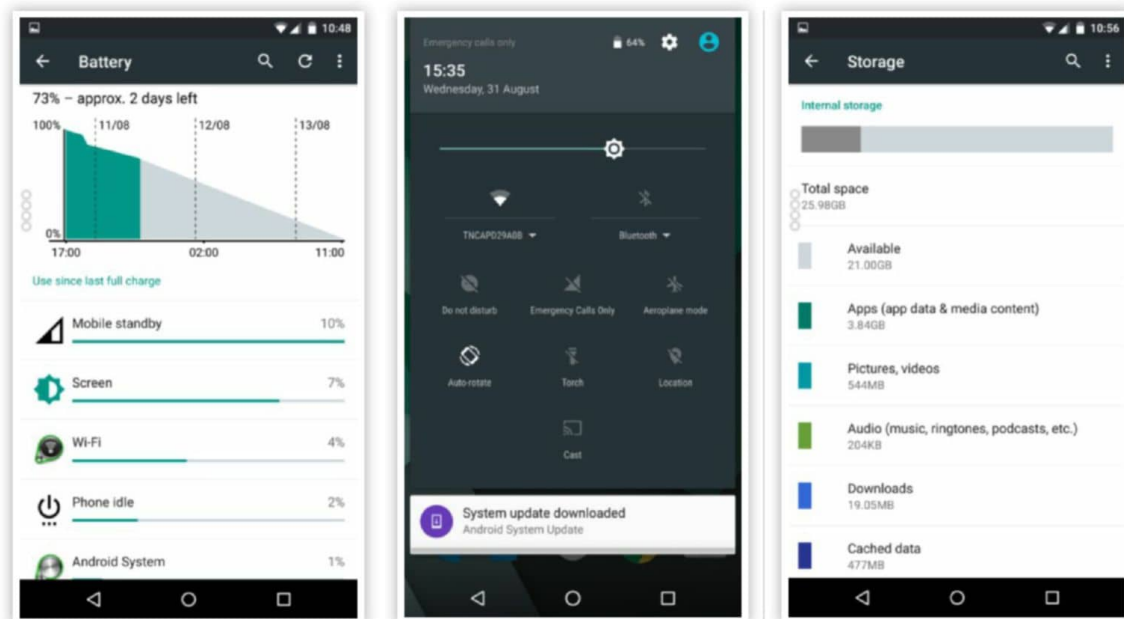
- 10 ▶ You can also activate Knox Active Protection for an extra layer of device security. Knox Active Protection, or KAP, uses both Real-time Kernel Protection (RKP) and DM Verity, a feature that provides integrity checking for system code and data, to protect your device data.





# 10 Common Problems Solved

Android has been blessedly free from any major problems for a long time, as the software continually improves and Google seems happy to listen to comments and suggestions from its massive user base. Where problems can still arise, however, is when the excellent software is not paired with excellent hardware. Let's take a look at some of the most common Android software and hardware problems, and ways they can be solved.



## 1. Battery Drain

► The easiest way to quickly reduce battery drain is to switch off a few power hungry features such as GPS (location) and Bluetooth, reduce the screen brightness and restart your device. This should see an immediate improvement in battery life. Some devices also now include battery saver modes, allowing you to reduce functionality for a short term increase in battery life. These are, however, generally designed as emergency measures, not day to day solutions.

You can read more about way to save battery power elsewhere in this book, and the application of a few or even one of these measures should help. If you are still having problems lasting the day on a full charge, then consider buying a new battery (if your device allows battery replacement).

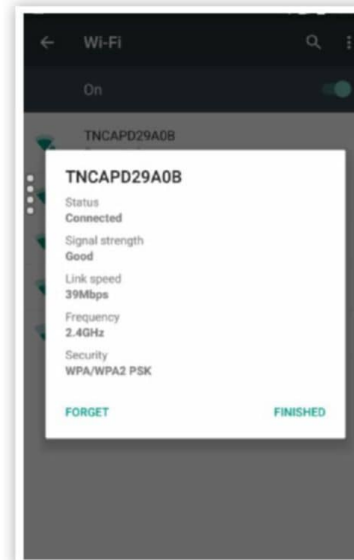
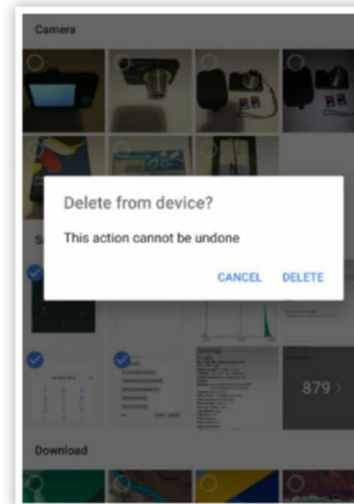
Lollipop offers users a detailed look at what is using the battery power on your device. Just look in Settings > Battery, and tap on each entry in the usage list to see possible fixes.

## 2. Lack of Storage

► The easiest way to solve a lack of storage space on your phone or tablet is, obviously, to remove some old content such as apps, photos or videos. You can easily remove apps by going to Settings > Applications, selecting the app from the list and tapping the "Uninstall" button. You can also uninstall apps by tapping and holding on the icon in the main app drawer, and then dragging the app icon up to the uninstall icon that appears.

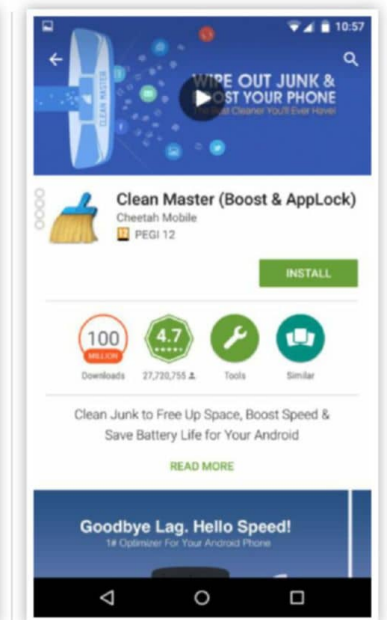
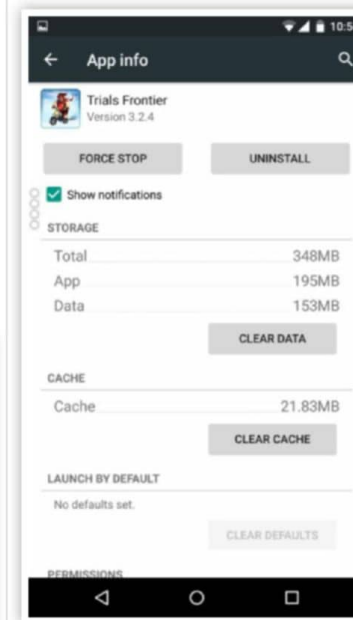
Photos and videos can be deleted from within the Gallery or Photos app, depending on your device. In both cases, tap and hold on the first image you want to delete, then select any others using the selection screen. Once you have all of the photos and videos selected that you want to delete, tap the Trash button or select "Delete".

Some devices, particularly phones, will allow you to expand storage space by inserting a MicroSD card. There may already be a MicroSD installed in your device, but it is unlikely to be the largest capacity the device can work with (check the manufacturer's instructions or website for maximum MicroSD capacity). This fairly cheap option could double or even treble the available storage space on your device.



## 3. User Interface Lag

► The main thing which will most likely be causing your phone to slow down and lag is a full or almost full internal storage drive. You can start fixing this by deleting unused apps and photos, or moving them to the cloud or a microSD card. Additionally, you should limit the use of live wallpapers and close open apps that you are no longer using. Another good thing to do is to delete app cache.



1 ► Any app's cached data can be deleted by going to Settings, clicking on Apps, selecting an app from the main list, and then choosing the "Clear cache" option.

2 ► Programs such as App Cache Cleaner and Clean Master, both of which are available for free from the Google Play store, can also be used to automate the cache cleaning process.

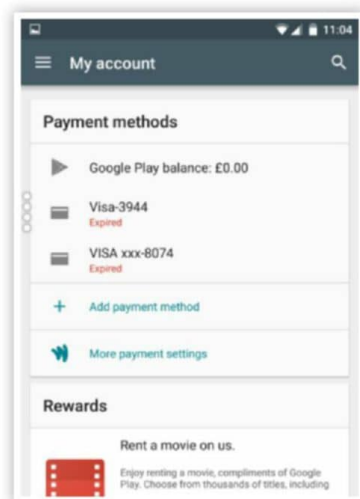
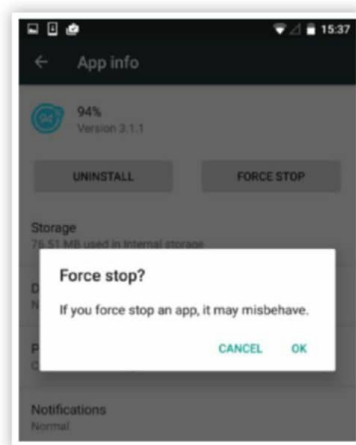
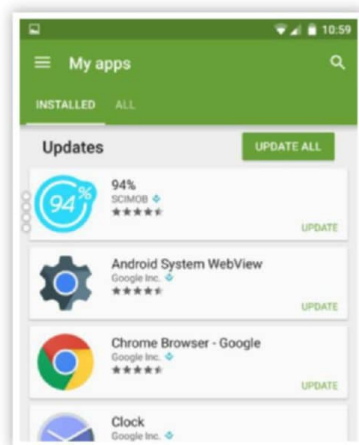
## 4. Wi-Fi Connection

► Any time the your device needs to connect to an external device (such as a Wi-Fi router or Bluetooth peripheral), the chances of encountering problems is increased. If you are having problems with your Wi-Fi connection, the first step to take is to reboot the device that's having trouble. You should also try rebooting the router it's connected to if that hasn't been restarted recently. Follow manufacturer instructions for rebooting your router. If that doesn't work, make sure that the router's firmware is up to date. This process will vary based on make and model, Instructions likely came in the router's box though they can also be found online.

If those steps do not work, you need to look at the Android device Wi-Fi settings. Once there, force the device to forget the Wi-Fi network. Simply tap on the desired network and a menu will pop-up. Tap "Forget network".

Select that and then re-enter the password to connect again. If that doesn't work, try changing the frequency in the Advanced menu. Go to Wi-Fi frequency band and play around with the different settings. It should be set to Automatic by default. If none of those fix the Android Wi-Fi problems, try updating applications or entering Safe Mode to try and single out problem apps. If that doesn't work, it might be time to factory reset the device.



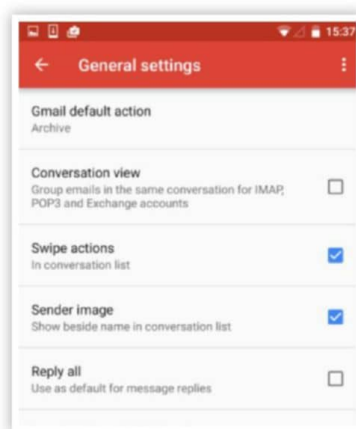
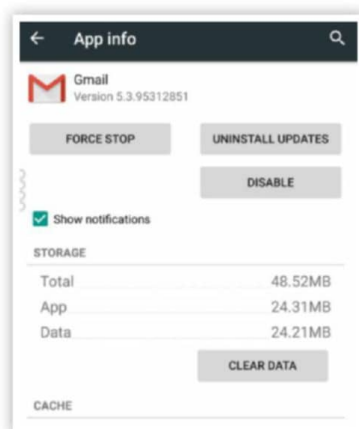


## 5. Apps Crashing

▶ If apps are consistently crashing during operation, the first thing to do is to check for any available updates for those apps. You can do this by opening the Google Play Store app, tapping the Menu button and selecting “My apps”. Here you will see a list of all apps which have updates available, and be able to tap to update.

If there is no update available for the app that is crashing, it is worth either uninstalling the app and then reinstalling it. Alternatively, open the main settings, click “Applications” and find the problem app in the list. On the app info screen, clear both the app data and the app cache. Tap “Force Stop”. Now head back to the home screen or main app drawer and open the app to see if the crashes have stopped.

If the problem persists even after these steps, there may simply be a problem with the app (rather than a problem with your device). If you really want to dig deep, install a System Monitor app (System Monitor Lite is great for this) and see if the app is showing any resource spikes. If so, this could be causing the crashing, and indicates a problem with the software.



## 6. Sync Errors

▶ If it seems that an app such as Gmail or Dropbox isn't syncing properly, the first thing to do is to check that the app in question is working and fully up to date. You can check for updates for apps by opening the Google Play Store app, clicking “My Apps” in the menu and checking the update list. Apply any available updates and check to see if that fixes the sync problem.

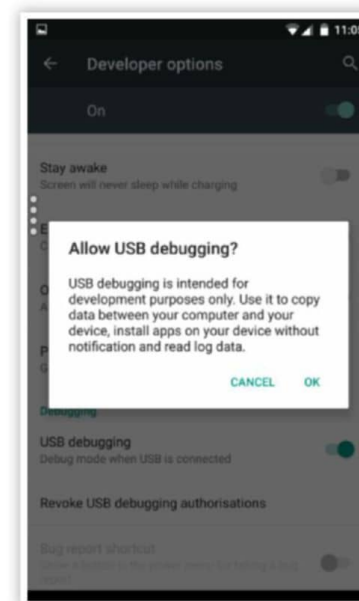
If not, you can try clearing the app cache and data. This will usually mean that you will have to sign in to the app again, but it should fix persistent sync problems. Open the apps in question and check that the individual sync settings are correct. You can also check sync settings for all of your Google apps, as well as things like Facebook and Instagram, in the Accounts section of the main settings.

## 7. Play Store Problems

▶ Although it is thankfully fairly uncommon, some apps on the Play Store are only compatible with specific types of Android device. View the Play Store on your Android tablet and you will see a subtly different selection of apps compared to when you view the store on your Android phone. Generally, apps which aren't compatible with your device won't even be displayed. This is not the case when viewing the Play Store on a computer. Here you will see all apps, but will need to check the compatibility notice just below the Install button.

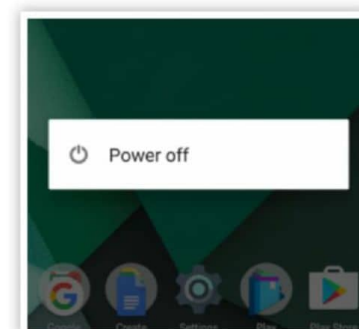
If you receive a “Download unsuccessful” message when attempting to download an app, try the following troubleshooting steps to resolve the issue:

- For paid applications, confirm your credit card information is up to date by signing in to your Google Wallet account.
- Clear the cache of the Google Play Store app (visit Settings > Applications > Clear cache).
- Restart your tablet, then try downloading the app again.
- Confirm there is connectivity to either a wireless or cellular network on your device, and contact your mobile service provider if you aren't connected.
- Ensure there's enough space on your tablet for the app to install.
- If none of the above steps work, try remounting your SD card, if your tablet has one. Tap Menu > Settings > Storage > Unmount SD card; then remount the SD card from the same menu by selecting Remount SD card, or restart the device if the remount option isn't available.



## 8. PC Connection Fails

▶ Even though Android devices are (in my opinion) almost trouble-free, some of you (in most cases users of Windows) report USB connection problems. There are a few different symptoms of Android USB connection problems. The most often problem is that you can't transfer files between your device and your computer or manage your device through your computer. If you are experiencing any problems connecting your Android device to your PC, these are the steps you should follow.



## 9. SD Card Unrecognised

▶ This can potentially happen at any time, even with a fairly new SD Card. Try formatting the SD card from within Android. This solves some of the issues with SD cards, and if you haven't tried it yet, it is worth attempting.

To format an Android microSD card, go to Settings > Storage and scroll down to the bottom and select “Format SD card”. Then select “Format SD card” again. If this fails, you will need to connect the SD card to a PC with a card reader. If your files aren't readable after connecting to a PC, you may have more luck using data recovery software.



## Restart Your Device and PC

If you've been using your computer or Android phone for a long time without restarting, they may be simply overloaded. That's why the first thing to do is to restart your computer and then restart your Android phone.

## Update Your Android Device

Sometimes there may be some bugs in the software and updating your Android version may indeed help. This is particularly true if you are using an older version of Android with a new version (8.1 or 10) of Windows.

## Update Your PC

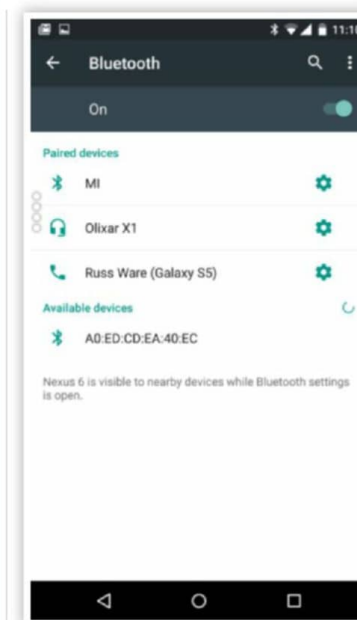
Sometimes outdated system (most often Windows) will not recognize any Android device (or any USB device). That's why it's always a good idea to update your system, particularly the USB drivers. Remember not to install too many updates at the same time (not more than two or three).

## Try Debug Mode

This is the mode intended for developers. It allows you to directly access your phone, transfer and install apps without notification. To activate debug mode, go to Settings > Developer options > and check USB debugging. Plug in your device. If Developer options aren't unlocked on your device, open Settings > About Device and tap the “Build Number” heading 10 times.

## New USB Cable

Android USB cables will undoubtedly become damaged or worn over time, so it is certainly worth trying to connect using a different cable if you have one available. If not, you can buy replacement Android USB cables online or in electrical stores for little money.



## 10. Bluetooth Connection

▶ If you are dealing with Android 5.1.1 Bluetooth issues, first try switching the Bluetooth off and on. This is a simple fix but it is known to work for many users. After that, if the problem persists, try clearing the cache on Bluetooth Share. To do this, head into Settings > Apps > Scroll over to All > Select Bluetooth Share > Clear Cache. After doing this, power down the device and boot back up.

You can also try to Clear Data from the same screen. This will cause the Android device to forget all known Bluetooth devices, and allow you to essentially start scanning for them from scratch.

If none of the aforementioned fixes work, try booting into Safe Mode. To do this:

1. Ensure your device's screen is on, then press & hold the Power button.
2. Touch & hold the Power off option in the dialogue box.
3. Touch OK in the following dialogue to start safe mode.

Users trying to connect to Bluetooth in a car will need to consult the car's manual to reset the car's Bluetooth connection, as the process is going to be different for each make and model. Once that connection has been reset and the connection's been forgotten on the device, try reconnecting.



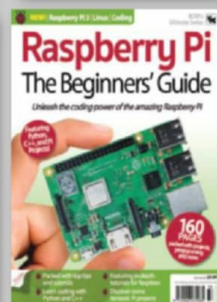
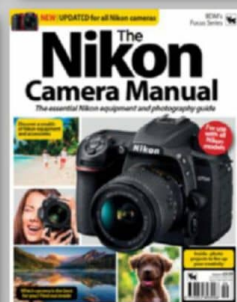
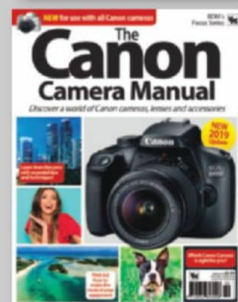
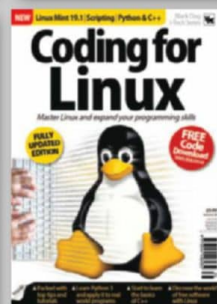
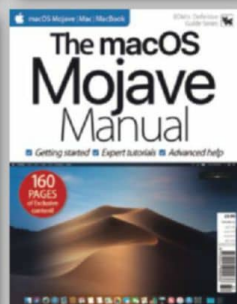
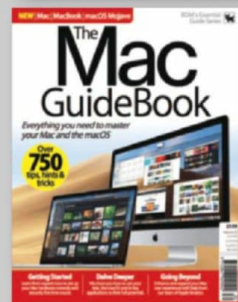
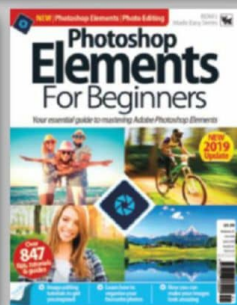


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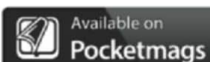
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